

# **LEHMAN A. “MONK” FERRIS:**

## **LIFE OF A BUSY MAN**

### **RECOLLECTIONS OF MY WORK AS AN ARCHITECT, BUILDING INSPECTOR, AND CIVIC LEADER**

Interviewee: Lehman A. “Monk” Ferris

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#### **Description**

Lehman A. “Monk” Ferris was born in 1893 in San Jose, California. His father was a gunslinging sign painter in his early days, who later became an architect. His mother was from a pioneer family which emigrated from St. Louis, Missouri to Watsonville, California in a wagon train. From Watsonville, the Ferris family moved to Colorado and then back to Pacific Grove, California, finally moving to Reno in 1906. Northern Nevada has been Mr. Ferris’s home since that time.

Mr. Ferris studied electrical engineering at the University of Nevada, but family financial problems interrupted his studies in his junior year. He then became a mine electrician at the Nevada Hills mine, and after losing a thumb in a mine accident he went to McGill with a survey crew. Before long he became a draftsman and later went to work as a specifications writer and superintendent of construction. Eventually Ferris went into partnership with his father as an architect; the Depression forced the dissolution of their firm in 1932.

After a variety of construction-related jobs he became the Reno Building Inspector in 1935, and started to develop an architectural practice in the evenings. In 1945 he again took up the practice of architecture full time, eventually forming a partnership with Graham Erskine. His firm designed Reno High School, Wooster High, Hug High, the Legislative Building in Carson City, and Harold’s Club.

As a result of his experience with the construction industry, Mr. Ferris became interested in building codes and in the International Association of Building Officials, the organization responsible for developing the Uniform Building Code. He was active in this organization for many years and was president for two years starting in 1939. He was instrumental in getting the Uniform Building Code adopted in Reno. Ferris was the first chairman of the Nevada State Board of Architecture, and as such he has Architectural License No. 1 in the state of Nevada.

Mr. Ferris had the opportunity to observe the construction industry evolve. In his oral history, he details building construction practices and the development of the architectural and engineering professions in northern Nevada during the early and mid-1900s.



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An Oral History Conducted by Mary Ellen Glass

University of Nevada Oral History Program

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## PREFACE TO THE DIGITAL EDITION

Established in 1964, the University of Nevada Oral History Program (UNOHP) explores the remembered past through rigorous oral history interviewing, creating a record for present and future researchers. The program's collection of primary source oral histories is an important body of information about significant events, people, places, and activities in twentieth and twenty-first century Nevada and the West.

The UNOHP wishes to make the information in its oral histories accessible to a broad range of patrons. To achieve this goal, its transcripts must speak with an intelligible voice. However, no type font contains symbols for physical gestures and vocal modulations which are integral parts of verbal communication. When human speech is represented in print, stripped of these signals, the result can be a morass of seemingly tangled syntax and incomplete sentences—totally verbatim transcripts sometimes verge on incoherence. Therefore, this transcript has been lightly edited.

While taking great pains not to alter meaning in any way, the editor may have removed false starts, redundancies, and the “uhs,” “ahs,” and other noises with which speech is often liberally sprinkled; compressed some passages which, in unaltered form, misrepresent the chronicler's meaning; and relocated some material to place information in its intended context. Laughter is represented with [laughter] at the end of a sentence in which it occurs, and ellipses are used to indicate that a statement has been interrupted or is incomplete...or that there is a pause for dramatic effect.

As with all of our oral histories, while we can vouch for the authenticity of the interviews in the UNOHP collection, we advise readers to keep in mind that these are remembered pasts, and we do not claim that the recollections are entirely free of error. We can state, however, that the transcripts accurately reflect the oral history recordings on which they were based. Accordingly, each transcript should be approached with the

same prudence that the intelligent reader exercises when consulting government records, newspaper accounts, diaries, and other sources of historical information. All statements made here constitute the remembrance or opinions of the individuals who were interviewed, and not the opinions of the UNOHP.

In order to standardize the design of all UNOHP transcripts for the online database, most have been reformatted, a process that was completed in 2012. This document may therefore differ in appearance and pagination from earlier printed versions. Rather than compile entirely new indexes for each volume, the UNOHP has made each transcript fully searchable electronically. If a previous version of this volume existed, its original index has been appended to this document for reference only. A link to the entire catalog can be found online at <http://oralhistory.unr.edu/>.

For more information on the UNOHP or any of its publications, please contact the University of Nevada Oral History Program at Mail Stop 0324, University of Nevada, Reno, NV, 89557-0324 or by calling 775/784-6932.

Alicia Barber  
Director, UNOHP  
July 2012

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## INTRODUCTION

Lehman A. "Monk" Ferris is a native of California, born in 1893. He attended public schools in California and in Nevada and studied engineering at the University of Nevada in Reno. With this educational training, and with his father's architectural business as a pattern, Mr. Ferris began a career in building and construction in Nevada that lasted more than fifty years. He became one of the state's outstanding architects and a building expert well known all over the nation. Professor Bruce Douglas's introduction to the oral history outlines and evaluates some of Mr. Ferris's many contributions to the building profession and to Nevada society.

When invited to participate in the Oral History Project, Mr. Ferris accepted graciously. He was a cooperative and enthusiastic chronicler of his affairs through thirteen recording sessions, all held at his home in Reno between April 22 and August 5, 1970. Mr. Ferris's review of his oral history resulted in no substantial changes in language or text, and in the addition of a number of informational footnotes to aid the researcher.

The Oral History Project of the University of Nevada, Reno, Library preserves the past and the present for future research by tape-recording the reminiscences of persons who have figured prominently in the development of Nevada and the West. Scripts resulting from the interviews are deposited in the Special Collections departments of the University of Nevada Libraries at Reno and Las Vegas. Lehman A. Ferris has generously assigned his literary rights in his oral history to the University of Nevada, and has designated his memoir as open for research.

Mary Ellen Class  
University of Nevada, Reno  
1971



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## SPECIAL INTRODUCTION

L. A. “Monk” Ferris was born in 1893 in San Jose, California. His father was a gunslinging sign painter in his early days who later became an architect. His mother was from a pioneer family which emigrated from St. Louis, Missouri to Watsonville, California in a wagon train. From Watsonville, the Ferris family moved to Colorado and then back to Pacific Grove, California, finally moving to Reno in 1906. Northern Nevada has been Mr. Ferris’ home since that time.

Mr. Ferris inherited the self-reliant pioneer influence of his parents and has been a leader throughout his professional life. The following episode from his college days illustrates his get-it-done approach: He and his pals were not invited to join either one of the two fraternities then available, so they started their own. They took the drastic action of surreptitiously obtaining the luggage of newly arriving collegians and dropping it off at their own fraternity house. When the owners of the luggage came to retrieve their belongings, they were phi with the advantages of the neophyte Phi Delta Tau. In this way

the Phi Delta Tau’s managed to acquire the baseball team and a good part of the football team as pledges. They later became affiliated with the ATO fraternity.

Mr. Ferris studied electrical engineering at the University of Nevada, but family financial problems interrupted his studies in his junior year. He then started his career as a mine electrician at the Nevada Hills mine, and after losing a thumb in a mine accident he went to McGill with a survey crew. Before long he became a draftsman and soon thereafter went to work as a specifications writer and superintendent of construction. Eventually he went into partnership with his father as an architect; the depression forced the dissolution of their firm in 1932.

After a variety of construction related jobs he became the Reno Building Inspector in 1935, and started to develop an architectural practice in the evenings. In 1945 he again took up the practice of architecture full time, eventually forming a partnership with Graham Erskine. Examples of local structures designed by his firm are the Reno

High School, Wooster High, Hug High, the Legislative Building in Carson city, and Harold's Club.

As a result of his experience with the construction industry, Mr. Ferris became very interested in building codes and in the International Association of building Officials, the organization responsible for developing the Uniform Building Code. He was active in this organization for many years and president for two years starting in 1939. He was instrumental in getting this building code adopted in Reno. In addition, he was the first chairman of the Nevada State Board of Architecture, and as such he has Architectural License No. 1 in the state of Nevada.

Mr. Ferris' oral history is a most interesting account of a local architect who had the opportunity to observe the construction industry evolve. Researchers concerned with the life of northern Nevada during the early and mid-1900's should take special note of the building construction practices and the development of the architectural and engineering professions during that time.

Bruce Douglas  
Assistant Professor of Engineering  
University of Nevada, Reno  
1971

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## MY EARLY LIFE AND EDUCATION

I wanted to start in today with being born, which, as you know, is May 14, 1893, in San Jose, California. And as a sidelight right there, at one time one of my relatives, an aunt, living in San Jose had died, and my mother wanted to go to her funeral. So I took Mother to the funeral, and afterwards, I asked her if she would show me where I had been born (which was on Third Street, just off St. James Park). And she took me over there, and on that site was a garage of the Osen Motor Sales Company. And in Reno, at the same time, I was putting a new floor in the Osen Motor Sales garage [laughing].

Well, shortly after I was born, we moved to Watsonville, California, where we evidently lived with my mother's parents, whose name was Hamm. Grandfather [Jeremiah) Hamm made his living by training horses for the San Francisco fire department. When they were trained, he sold them to the department.

My early days, as I remember them in Watsonville, was a matter of swimming in the Pajaro River and stealing watermelons and strawberries from the Chinese. They had lots

of Chinese there. And also, at that time, they had boats which came to Watsonville from San Francisco and loaded up with fruits and vegetables, and so forth. And it was always interesting to go down and watch the boats come in.

From Watsonville, we went to Cripple Creek, Colorado. All I can remember of Cripple Creek, Colorado is digging little holes in the ground and putting up a little headframe and having a little "mine" of my own. Don't remember much of anything else. I do remember, though, when we moved to Colorado Springs. And my grandfather was alive there. That was Grandfather Ferris.

Grandfather [Edward] Ferris had a linen establishment, silk and linen, which he sold both in Colorado Springs and in Philadelphia. And he made trips to Europe every year to buy these linens. I can remember playing pinochle with my grandfather. He'd get so mad when he lost. We'd play it on a lap board that went around. You set it down when you were sewing across a chair. [It] fitted around you here and went out like this [gesture].

I took long walks with Grandfather, out to the Garden of the Gods, even. And on one occasion, my father took me on top of the highest rock in the Garden of the Gods, [a collection of tall (200-300 feet) rocks a few miles from Colorado Springs], and I could still remember looking down at one spot where there was a rather narrow ledge. I don't know whether it was three feet wide or five feet wide, but in my memory, this was a narrow ledge. And it was nine miles down to the ground. [Laughing] I can remember when I got on top of it, I laid down on the top of the rock and put my hands out like this [gesture] to make sure that I wasn't going to topple. Then I got over that, then came down in nice shape.

Also, at that time in Colorado Springs, something that might be interesting to somebody—. The main hotel of Colorado Springs was called the Antlers Hotel. And during the time we were there, the Antlers Hotel burned down. And it was a terrific fire—great big, wooden building. And there was a lumber yard next to it, and the lumber yard caught fire, too, So it was a real spectacle.

One other thing I remember. In 1900, we were in Colorado Springs. At twelve o'clock midnight, my father got me out of bed, wherever I was. I remember his picking me up. He took me outside and held me in his arms, and the whistles were blowing and the bells were ringing, and he said, "This is the only time thee will hear the century bells." I remember that just as plainly—.

From Colorado Springs, we went to Trinidad [Colorado]. Trinidad was, at that time, a coal mining town. And I can remember two things there. There were a group of Indians called Penitents. And they had a yearly festival at which they whipped one another on their bare backs with some sort of thorny twigs that they got from the

surrounding country. And this was very private. No one was ever supposed to see it. But us kids got out and hid in the sagebrush. And I can remember witnessing that. I wasn't close enough to get sick or anything. I'd see the red on their backs, and that sort of thing.

The other thing I remember about Trinidad is that one of the main streets went from a high level of the town down to the railroad station. And we had lots of snow, and sledding was a real activity. And we used to sled down this hill. And I can remember some of the more crazy, Imlay say, lads, taking cans with little holes punched in 'em, loaded with water. And they would go down the sidewalk and sprinkle this water. And this would freeze. And then they'd try to go down the sidewalk on skates. And that was the time of broken legs and arms, and all kinds of trouble. I can remember the uproar that this finally caused, and they finally put an end to it.

We moved to Pacific Grove [California]. My father at that time was a sign painter by trade. And as a matter of fact, he earned his living as a sign painter until we came to Reno. He was also a musician (he played the flute in the local orchestra). Outside of that, though, he didn't seem to have very many contact's outside of the people he met in the orchestra.

In Pacific Grove, I learned to fish a bit. I earned some money cleaning out the boats of fishermen who came in after a day's sport.

We played all over that peninsula. One of the games we used to play was "hare and hounds." And we would wind up usually at Carmel. And at that time, which was 1905, about, roughly, Camel Mission was just a deserted building with one priest and the smell of dead animals. There were no homes or anything of that sort around there. I remember the shipwrecks that we used to have, And I can remember playing hare and hounds one time. There was a shipwreck

that was loaded with telephone poles. And these telephone poles had all drifted into a little inlet. And I thought that as I was being chased (I was a hare, and the hounds were close), that I'd simply scale down this little cliff (it was only twenty or thirty feet high) and run across on those poles. well, I got down, all right. And when I got on the poles, it started to run on then, they were turning on me. And I had the darnedest time getting across. It was only perhaps fifty or sixty feet across this little bunch of water. I nearly went in sometimes [laughing]. These things—I don't care whether you put them in or not, but they just keep coming to me as things that have happened.

I can remember, too, whenever there was a Chinese funeral, we used to go down to the graveyard after the funeral and eat the roast pork that they left for the dead man [laughing] on his journey to Heaven.

We stayed in Pacific Grove, where I went to finally the eighth grade, I guess. I was in the eighth grade when we moved in 1906, right after the earthquake. And I can remember coming up on top of the stable. Well, this had a better name than that, but it was a stable. And it had a tower. And from that tower, you could see the smoke of the San Francisco fire on a good day [laughing].

And another odd thing about that (which nobody'll be interested in) was that my present wife, Bunny, lived in Pacific Grove at the time. Of course, we never saw each other. I was four or five years older than she was. But the two of us lived [there], and then we finally met again in Reno.

Well, from there, we came to Reno. I was in the eighth grade and went to the old Southside school. From there, we moved into the old high school, which was on West and Fifth Street, I guess. This was 1890 type of building with high steps to the first floor and

very steep steps to the second floor. I went to school there in 1907. It must've been 1907. I graduated from high school in [19]10-1/2. That's at Christmas. I was three and a half years in high school.

Nothing transpired. There was one little incident in high school that I have remembered with a little amusement, that in the physics class. During that time, the bell system went out of order. And our physics teacher said it would be a good exercise for the class to find out what happened and to repair it. So we went around to find out what happened. We found a break in the wire in the attic. And the attic of that building must've been fifteen feet high, the old roofs, you know, that went way up. And it was rather dark up there. And one of our boys who hadn't been too smart in physics was with us, and we told him that if he would take the two ends of that wire and put them on his tongue, that when we got current in the wires, he could taste it because it would taste salty. So he sat up there and kept the wires on his tongue while we went down and got all the batteries we could find. In those days, the battery was a little circular battery, about three inches in diameter and about eight inches high, had one and a half volts, is all. We got two cases of them and connected all the batteries up in a series. And when the juice went through, Chester [laughing] stuck his foot through the ceiling! And where should he be located, but right over Dr. Ed Dopey Chase's office. (He was the principal of the [laughing] high school.) So who got blamed for it but me, and I was forced from then on to study in Dopey Chase's office and carry messages around to the various teachers. And I had really a ball for a while.

There was also, at that high school, the one good well for water for that entire area. People used to come there with buckets and get water by the hour.

Well, the eraser-throwing incident was in high school. I threw this eraser at Van Camp, I think his name was. And he was standing, reading a book during a study session. We were doing all kinds of things in those days, a little stuff in the inkwells which made gas. And I can remember Frank Golden would lift his seat top ([gesturing] this was the seat), and as he brought it down, he'd go, "Aw me-e-e-e," tried to make believe it squeaked. And he'd yell [laughing] like nobody's business. Well, then, we'd also put a little cayenne pepper in the stove. They got it heated with stoves. And that also gave us a little respite once in a while from studies.

And on this particular day, I thought that I would startle this Mr. Van Camp. And they had erasers that were soft, had a stiff back and then a lot of soft—I don't know what they call them. Anyhow, they were soft and hard, both. I thought that I would just throw this eraser as hard as I could and hit the blackboard alongside of Van Camp and watch him jump. Well, I didn't hit the blackboard. I hit him right on the jaw with the chalky side of this eraser. And I could throw! That didn't go easy. And that man stood there, chewing his lip [laughing], and read his book. And he never said a word about it.

Our principal at that time was named [E. E.] Winfrey. One day, I had gone out in the hall to get a drink of water. They had a tank with a little faucet that you got your drinking water [from], and Chump Seitz, another fellow, was out there, and we got into a bit of a wrestling match. And I couldn't think of anything to do but throw the water cooler at him, which I did. [Laughing] He was running down the stairs and the water cooler bounced down the stairs after him. Winfrey got me into his office and he started talking to me, and then he called me a whelp and an imp of Satan. And I thought that [if] anybody called

you a whelp, you had to do something about it, so I hit him [laughing] and left, fast. And I was immediately barred from school and required to come to Miss [Goodwin] Doten (a relative of the Doten at the University, I believe; she also had study periods), and apologize to her. And this, I refused to do. My father at the time was designing a couple of schools for the school board. And naturally, they talked to him, and he talked to me, and I don't remember that he just talked to me, as a matter of fact. But [laughing] he wanted me to go and apologize. And finally, after a week, I went in and apologized to Miss Doten. I've forgotten what I said or whether I was sullen or what it was. But anyhow, I got back to school.

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## REMINISCENCE ABOUT MY PARENTS AND THEIR FAMILIES

Let's see, do you want to talk about Father a bit? Dad, his family—we have a family tree of Dad. His family came over to this country, we'll say, about 1700. There were four branches of the family. I was sure—I think Ann has that family tree, by golly. Anyhow, I'd better not give dates, and so forth, because I don't know really what I'm talking about. It has never been something about which I was concerned, my family background, and so forth. Some people are obsessed, almost, with their ancestors, and so forth, and I'm not. And I didn't pay much attention to it.

But anyhow, they came over and settled in Baltimore, in Wilmington, and in Philadelphia. They were Quakers, ultimately. Maybe they were not Quakers when they came over here. Dad was born in Philadelphia, I believe. He had two sisters, Katherine and Edith. He went to the usual schools and wound up in a University, Swarthmore, from which he was ejected, I think, in about his freshman year for prankishness. He was a really up and coming, go-getter sort of a guy. He was on the move all the time, never in one place for long. And

I think that at nineteen, about, he left home and came out West, where he became a sign painter and a painter of, oh, buggies, and all sorts of things.

At one time, his father was a linen merchant with stores in Philadelphia and Colorado Springs—Colorado Springs much later, however. And he ran away and came out here to this country, and the stories that I have heard from—.

An old-time gunman was his partner—not the gunman himself, but the gunman's nephew [Kit Carson], who was also very fast with a gun. This gunman in his later years came here and promoted the Black Panther mine, Which I think was perhaps a [laughing] promotional scheme. And while he was here, he told me a number of stories about Daddy. And Dad, at the time that he had his cancer treatment in San Francisco (we were there for two weeks together)—. At least we told him that he did not have cancer, although he did have it. But the doctor said that his metabolism was so slow that he could keep him alive for four or five years with X-ray

treatments, and there was no need to tell him because he never in the world would live four or five years. He only lived half a year after that, as a matter of fact.

Well, while we were in San Francisco, he told me some stories, too. They jibe, by the way. He came out here, and he became a sign painter, painted buggies, and all that. He was a painter, is what he was. And he would go to a town and immediately buy some paint and get a little shop and start doing some work, and when he got broke he'd hightail out of there and go to another town. And his pal was a dentist who had also run away from home. And when they came out here, they had the idea that you did not allow a Mexican in the same county with you. So these two characters went into a restaurant for lunch. And in the rear of the restaurant, there was a table with four or five Mexicans. Dad promptly drew his gun and ordered the Mexicans out, and [laughing] he told me the air was full of knives. He said he got one right here, through the shoulder [gesture]. And the Mexicans left and he said that was the last time that he tried to show any Mexicans the proper way to treat a white man.

Another story he told was, he was an Indian scout. And [as] the Indian scout, he was with this gunman [Kit Carson]. One of the stories is they were camped on the back of Pike's Peak at an elevation of perhaps 10,- 11,- 12,000 feet—I don't know how high up, up near the top. And he said they were going to have beans. And he said they boiled them for three days, and they still weren't cooked [laughing].

And he tells about killing bears and cutting off the paws. He said some of the best meat you ever ate (when you're young and out in the country [laughing], I guess) was bear's paws when they are encased in mud and put down in a hole which has had a fire, and it's got hot rocks or hot sand, and then covered

for a day, I suppose. He says you never tasted any more delicious meat than that.

And he tells the story, he got married shortly after he came out. And shortly after that, a gambler stole his wife. And it seems that in those days, if you wanted to hold your head up among men and anybody stole your wife, why, you proceeded to shoot him quite dead. So this guy's name was Jack—I think they said it was Black Jack something or other. But anyhow, his first name was Jack. That's the best I can do. And Dad chased him over the country, caught up with him in Cheyenne, went into this hotel where he heard this guy was staying. The clerk told him the fellow was in his room. He went up and told the guy to open the door, like a dope. The guy didn't open the door, so Dad kicked it in and marched in, and they both were shooting. And Dad killed him. That, he felt, this was the thing you did! You were all okay from then. No prosecution of a guy who did that. to a fellow who stole his wife. Why, the idea! He should have been happy someone stole that one!

Another story that's told, that he had an argument with somebody at lunch which got a little bitter, and it seems that you didn't have to get too bitter, those days, till you pulled your gun. So he went back to his shop, which was a small wooden frame building, and he was painting a buggy. He was down on his haunches painting the spokes. And the man that he had argued with walked in the door. And as he did, he pulled his gun. But the floor of this building had been made by laying down one-inch planks about twelve inches wide, and they had warped. And this guy stumbled on one of them that was sticking up and fell. And Dad got across the room (I suppose it was only [laughing] ten or twelve feet), but his gun was hanging on the wall. He got across the room, got his gun, and shot this guy right through the top

of his shoulder [laughing]. Otherwise, the guy would probably have shot him. And this would have been a gunfight which, it seems, was all right in those days.

He carried lead in his knee and in his arm to the day he died, small chunks of lead from some past disagreements [laughing] to the day he died. He showed me his gun. It was a tremendously big thing, and it was like stainless steel. It was shiny. And the handle was white. I don't think it was pearl or anything like that, but the handle was white. Quite a heavy gun.

These stories, most of these stories of his using a gun had come from this partner of his. And I wouldn't be surprised if he and his pal shot some Indians and took their horses and sold them while they were— [laughing]. Oh, he was quite a boy in his younger days!

He bought a lot of paint in one town and couldn't pay for it, couldn't get any business, so he moved out. He moved out. And they immediately started trying to catch him, make him pay for the paint (I don't know what else they might have done to him). And he went down the Colorado River on either a boat or a raft or something—not through any rapids, or that sort of thing, but down the river, until he was in Arizona. And he got off the raft in Arizona. I suppose he camped a little bit, go on the raft, and camp, or what have you, but anyhow, he was getting out of the way. He got off this raft and came into this little town in Arizona, and the first guy that he saw was a man who knew him. And he said, "Rex!" (His name was George, but his nicknames were "Dick" and "Rex.") He said, "Rex, did you know they're lookin' for you?" He said, "You better not show your face." And I guess Dad asked him if they knew about him all the way down here, and he said, "Yeah." He said, "The stage came in the other day, and they told us they were lookin' for you.

So he had to hide again. So those were his earlier days.

As I say, he was a sign painter, and he was quite good. And when we were in Colorado Springs, that's the way he made our living. He was a sign painter, and I have sat and watched him paint signs with his maulstick,\* a stick that vent out here [gesture], and he put his hand on it to make lines, and so forth.

We had gone to Pacific Grove, and he was a sign painter there [and a] member of the orchestra. But things were slow. So he and a friend of his named Alben Lundberg decided that they would come up to Reno. And he came up to Reno with a jackass. They packed their way across the mountains and came into Reno here. And that's when he met Harry Saviers and became a sign painter and settled in Reno. Lundberg also settled in Reno with him.

Another little sidelight—he rowed on the rowing team at Swarthmore. And he got what was called—or, what he told me was an athletic heart, which meant that it became enlarged somewhat. He had to be very careful of his heart and get some exercise. And his exercise was riding a bicycle. In those days, one of the bicycles that was really tops was called a "Victor" bicycle. He went to Colorado from Watsonville on this Victor bicycle with a little pack on the back of it to sleep on, and he rode it all the way to Colorado Springs. We lived at Monument Place in Colorado Springs, right on Monument Creek.

And I remember in Colorado Springs, Monument Creek had a dump nearby where we lived, I was small enough in those days, by the way, that I rode the bicycle by putting icy legs through the bicycle instead of straddling it. This dump was just lousy with mushrooms.

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\*a stick used by painters to steady the painting hand.

And I didn't know a mushroom from a toadstool or Adam's off-ox, but I thought they were mushrooms. So I would go out and kick a lump of dirt, and there'd be practically a bucket of mushrooms underneath it—grew in nests. And I'd fill a bucket with mushrooms.

And then Monument Place was on the fringes of the expensive homes in Colorado Springs. It was only, I suppose, a quarter of a mile or so up the hill till I was in the midst of those expensive homes. I'd take my bucket of mushrooms up to the back door of one of those places and sell it for two bits— never had a bit of trouble selling it. As I say, I didn't know a mushroom from [laughing] Adam's off-ox. But I used to sell mushrooms two, three times a week.

Colorado Springs. I told you about the fire, the hotel fire—my grandfather. Oh, in Colorado Springs, I was interested in smoking. And my grandfather used to get a box of what he called cheroots, and they were, supposedly, cigars. And as I recollect them, they'd be five inches long or so, and they came in boxes of five hundred, all like this [standing up]. They weren't too big around, and we lived in a rather large house in North Tejon Street. The upstairs rooms were not even furnished. We didn't use them. So I would steal a cigar from Grandpa's [laughing] box of cheroots and go up and try to smoke it, and never finished it. And then I'd throw the cigar down in a closet up there, with only a few puffs out of it. They always went out. They weren't very good tobacco, I guess, and there was never any fire. But when my mother went up there one day [laughing] and found those cheroots, she gave me one of the few paddlings I've ever had from her [laughing].

That was also where I learned to roll cigarettes. On street corner after street corner, they would get a piano box. Upright pianos always came in boxes. And they would get

one of these piano boxes and set it up on the corner and let the cover (which was on a slope, like this [gesture]) flop out for a sale shelf, and they had some sort of candies, and always Bull Durham tobacco. And I would wangle or beg, borrow, or steal a five-cent piece. And I would try to roll my own cigarettes and smoke it. In Pacific Grove we smoked coffee, and we rolled pine needles and smoked them, let them [laughing] simmer. But that was awful. But I smoked, I guess, until I was—I must have smoked till I was fifty. Then I quit. I've never smoked since.

Oh, well, in Canada—Dad was very much pleased with Canada. He was an old-fashioned gentleman, just prim, and nice with women. And up in Canada, they dressed for dinner. They were very English, and they entertained a great deal, and this just was down his alley. He loved every minute of that time he spent in Swift Current [Canada]. And in addition, he became, I suppose, I judge, quite popular, and had built himself quite a substantial business in a very short time. There were no other architects there, of course. That helped. He had school business, and all that sort of thing, and he became a member of the Royal British Institute of Architects, which now would be very hard for an untrained man to join. But in those days, I imagine it was fairly simple.

But the war came along, and the moratorium was declared by the government and he couldn't collect any money, so he came back here. A postscript to that is that about two or three years later, he was billed for his back rent on his office, some two or three hundred dollars, and with information that they'd sue if he didn't pay it. He paid his rent. Dad was super honest. This was one thing that—he was too honest altogether, if you can be too honest.

That's about all know about his Canadian thing. I know that he was intrigued with the

life up there. And I've never been to Swift Current. But I have a notion that I'll drive in there one of these days and see what it looked like.

By the way, one of his accomplishments was the playing of the flute. And he was always in an orchestra playing the flute, wherever he was, until he came to Reno, and he discarded it altogether. I had his old flute for a long time, till the corks and the joints deteriorated so you couldn't use it anymore. But it was quite a famous old flute. [The flute is now property of the Nevada State museum.] His family, the two sisters and his father, his mother, I got to see once on Colorado Springs. His father was a linen and silk importer, I think, with considerable money. He used to go every year to Europe, and he bought his linens and silks, and so forth, brought them back to his store in—I believe it was Philadelphia. Then he opened a store in Colorado Springs. And one of the things I remember in Colorado Springs was his home on North Tejon Street, and the big four poster bed that he had. It looked like a railroad train to me. It was a tremendous thing! (1900, I was about seven years old.) And the silver that he had. I guess Anne has that silver, with the frets around the top, and so forth, now. We had a lot of it. And it disappeared this way, that way, and the other way. I don't know what happened to the family in Colorado Springs because of the upshot of it was—and while we were there, too, it happened his father moved in with us. And I used to play pinochle, two handed pinochle, with him. We'd play it on a lap board that women used to use to sew with. And if he lost, he'd dump the cards and the whole works on the floor. And that man, who was in his early eighties then, walked with me to the Garden of the Gods and back one day. I can remember that trip. I don't know how far it was; it must've been ten miles, anyhow.

Well, he went back to live with his people in Philadelphia. There were at that time several members of the family there. That's where he lived, and he finally became senile, and he was kept 'till his early nineties, when he died.

The two sisters also left home. No, they didn't; home left them, I guess. I don't know. I'd better not try to tell you what happened to them. But in any case, they went to Paris, and they opened a school for American girls, a finishing school for American girls. And one of the portions of the curriculum was a trip, taken to perhaps eight or ten of the countries of the time, and those two women, between them (I can remember this quite well), spoke thirteen language's. And they included Russian and Egyptian and Danish in those thirteen. I remember thinking that that was pretty confusing. But they used it all the time. They were in the countries every year, and so I suppose it—I don't suppose they were fluent in all those languages, but they got by. So they took their girls (supposing the people had paid them the money in the first place) on these trips around. And I used to get—oh, I can remember a beautiful stickpin I got from Egypt. The workmanship, it was all metal and some gems, and everything was inlaid, a beautiful thing. It lasted with me about a week, and it disappeared.

In World War I, they were caught in Egypt and had to get home as best they could. And their mother was with them. And they had to come back by automobile in terrific weather, as I got the story. Their mother got pneumonia on the trip, and she died. And they got back to Paris, finally, and then came over to this country. They opened a school here. I don't know where this school was, but I'm sure it was in Maryland. They had a finishing school here until the war was over, when they went back to Paris and resumed their school in Paris.

Then in world War U, they had retired. They had put all of their money (and I think it was quite a lot of money) into French annuities. And they had bought a home in Menton, which is about three miles out of Monte Carlo, east of Monte Carlo. And they had moved down there, and evidently were living quite happily. And they had all of their furnishings, and so forth. So Mussolini dropped a bomb right through their living room, blew the house to pieces. And, of course, Hitler took over France, and all of their annuities went up in smoke. So they had to come over to this country, and they had no money.

I told you the story of a number of these people who had been to their schools and loved these gals, made the Ferris Club, or whatever they—that was not the name of it. And they put in quite a chunk of money, and they got the two gals to Lisbon and brought them over to this country, and they bought them a place in North Carolina, and set them up in business. Of course, they only lasted about three years. They weren't investing a lifetime of money. But they took wonderful care of these two gals. Dad got back to see them. That's something I'd forgotten now. He finally made a trip. He finally made a trip back to Philadelphia and visited with some of his people, and he saw his sisters at that time. And I think that's the only time in his life that he returned (I know it is)—that he returned to the East. They died in their late eighties, I believe.

Now, the family all died off. There is no trace of Dad's family left but one woman. I don't know whether she's alive now or not. Ann would know. She corresponds with her. Her name was [Frances Canby] Ferris. I've forgotten her first name.

Hell, I thought she lived in Philadelphia. This is the tail end of the family, now, that I'm

talking about. I'm the tail end of my mother's side of the family. No one is left except Ann and Charlotte. And this lady is the tail end of my father's family, and she never has been married, and at this late date, she never will be, so that branch of the family will disappear.

I went back to Philadelphia on some trip. It was a convention, by the way. Oh, it's an American Institute of Architects convention. And I found that a very small clique of architects did all of the business of the convention behind closed doors. And when you had these big meetings, why, all you did was find out what they had done and vote for it or against it. Usually you voted for it. And I didn't care about that.

So I hired a taxi driver, an elderly gentleman, who, it developed, had had a laundry business, a rather prosperous laundry business, until the chain laundries began to come in and cut in on his business, and they bought him out. And he was independent, financially, but he needed something to do, so he had bought this taxi, which he drove daily, and he was a member of the taxi union, that sort of thing. (Then I was back there, the Yellow Cabs were on strike.)

I hired him to take me from nine o'clock to one o'clock each day and show me the city and tell me the stories, political and financial and all—scandal, all the stories. He knew them all. He'd lived there all his life. He'd been quite prominent. And this man was most interesting. And he took a shine to me; I took a shine to him. So he told me, he said, "I could make lots more money if I'd just take calls than I can make taking you around these places." He says, "I'm having a ball." So that was what I was doing with this guy. I would go to the meetings in the afternoon to see what happened so I could make a report to the [laughing] AIA here.

Well, it was the last day of my stay. The convention was over, and I had a plane reservation at two-something in the afternoon. We were driving around, and he passed an old meeting house, a Quaker meeting house. It's still there. And I said, That's where my father went to Sunday school. I'd like to see it."

He said, "Okay."

Well, he parked and I walked across the street. And I was met at the door of this meeting house by a little woman, reminded me very much of my mother, except she wasn't as heavy. And she had a voice like a bull. She greeted me, and I told her why I was there, and she took me around and showed me the artifacts and the clothing that they had on exhibition from the early days right on up to the present. (And incidentally, I saw the poor box a number of times. I had a chance to put a five-dollar bill in there several times.)

Well, she finally said to me, she said, "What is thy name?"

And I said, "My name is Ferris."

"Oh?" She said, "We have a Ferris in our congregation."

"Well," I said, "I've been trying to get in touch with (I can't get that first name. Ann'll have it) Ferris ever since I got here. And I have no line on her at all."

"Well," she said, "We have a - (well, anyhow, she used the name) in the church, and," she said, "I know her quite well. I'll give thee her telephone number."

Well," I said, "I'd love to have it!"

She handed me the telephone number, and I called up, and a lady answered and I asked if this lady was there, and she said, "No, she's at a neighbor's house."

And I said I was a relative of hers and I had been very anxious to see her but hadn't been able to get hold of her.

She said, "Well, I'll give thee her telephone number."

So she gave me the telephone number of the neighbor. I called her up, and there she was. And we had ourselves—oh, I nearly missed my plane. We had about a half an hour's talk over the phone. And the reason I couldn't reach her was she Wasn't in Philadelphia. She was in Harrisburg, which has a different exchange, or something. Anyhow, I didn't find her name. And that's the last of the Ferris family. That's the only other one of the Ferris family besides those I've mentioned that I ever saw. And now, there'll be no more seeing of any of them. Both families are dying out, completely. And that takes care of the families, as far as I know.

Mother—you wanted to know something about Mother. Well, Mother's mother came from someplace in Ireland, the north part of Ireland, which I believe is Catholic, isn't it? She was not a Catholic. And she came over to Canada, and I can't tell you when she came; I have no idea. But in any case, she came over to Canada, and went from Canada to St. Louis. And at St. Louis, she and her folks joined a wagon train and came over to California, and she and her husband settled in Watsonville. And they accumulated this little farm where he trained the horses for the San Francisco fire department. He did, however, have some farming along with it. Because I can remember, at the well, they had a screen house around the well. And they always put the milk in flat pans on tables around this well inside the screen so that the cream could rise on it. And then they'd take off the cream, and they sold the milk and the cream separately. And little Lehman, when he got hungry, would sneak in there and take the cover off those pans, which was just a piece of cheesecloth or something, and then lick the cream off

some of the And when he got caught, he got paddled [laughing].

Well, they came to Watsonville. She had sisters and brothers. And it was in Watsonville that she met Dad, and that's where they were married. And I don't know whether I have any dope on their marriage or not. [Consulting his papers] Jesse Hamm, Ida Marion Hamm, Edward Hamm, Alice Hamm, Harmon Hamm, Francis [Frank] Hamm, Mary Harm, Freddie Hamm, and George Hamm, Jeremiah Hamm, Susanna Hewn. How, let's see. Mary was my mother, and she was born 1866. She was one of a family of nine children. Now, Alice Hamm married Dan McEwen. June 6, 1888, she was married to my father. Holy matrimony. Now, what's this? [Consulting papers] And she had twins, which died at birth, or were born dead, I guess, and she had my brother, Edward Oscar Ferris, who was born June 30, 1890. And then she had me in 1893. Me, I was an eight-month baby. They almost lost me, too. Edward Ferris was born May 4, 1889 and died June 30, 1890. And I lasted. That's about all of the data that I have. Mother's death is not listed here. I don't know when Mother died. It must've been about—I was going down to get a life membership in the international association. [It was in the early 1950's.]

She was an old-fashioned wife. She followed her husband wherever he wanted to go, and he called the shots and she did it. And when they had financial reverses, of which they had quite a few in their early days, she was a seamstress, and she took in sewing. Actually, when Dad was up in Swift Current, Canada, and he had to leave and come back here and he'd lost all of his money, she made the living there 'till he got reorganized, by sewing-at home. And she would sit and sew. She was just the most even-tempered person. She had tremendous courage, tremendous

patience, and, of course, an abiding love for my father. She must have.

And she was the one who continually mellowed things between my father and myself, because we were continually at sword points over small things, such as, I had to wear suspenders and not a belt. And when all the boys in college or in high school were wearing belts, here I was with suspenders. And I wouldn't wear them. Well, that was a big hassle. I had to wear a vest with my good clothes. He had clothes tailor-made for me when he had money, and there would be a vest. And I would take the vest off when I left home. There was another minor matter, which was a desperate thing at home. Oh, I don't know. We were just like that. When he had money, he was the most generous guy in the world. I had money, all I could use. And when he didn't have money, he was just as generous, except he [laughing] couldn't give you anything [laughing].

He was a—I don't know just quite how to describe him. But I can tell you that he went through life without any very great worries about anything at any time—nothing really affected him deeply. And as I say, Mother went along with whatever it was he wanted to do, wherever he wanted to go; it was all right. She went along, and if she had to help make a living, she helped make a living. And if she didn't, why, fine. My Grandmother [Susannah Brown] Hamm lived with us in Reno up to the time of her death. I don't remember much about her.

Mother used to play the piano, and she sang in the church in Watsonville. And she'd play; for a while, she played a very acceptable piano.

Here in Reno, when she woke up one morning [she] said she couldn't hear. And it developed that there had been hemorrhage, internal hemorrhages, and the

nerves connecting her ear to her brain were destroyed, the aural nerve—I don't know what they call that nerve. But it was destroyed. There was no chance that she would ever hear again. And I don't know whether this happened twice. I guess maybe one ear went first, and then the second ear.

I was away from home a good part of this time, and I don't remember how she reacted to this loss of hearing and how she adjusted to it, because my first keen recollection of Mother was when I was back home and they were in financial straits and I was helping out, and I was more or less in the house quite a bit, then. And I found that she had adjusted very smoothly and serenely. She was a Christian Scientist, a devoted Christian Scientist, and I really believe it gave her a great deal of support in enduring her completely changed status, no hearing whatsoever. And this, in connection with the rather light schedule [laughing] of social events and things that she indulged in, certainly cut her down almost to a lonesome person.

We tried to get some apparatus that would help her hearing, but it was gone. And the only thing that she ever seemed to get as the result of sound was parades. And when the band would come by, the bass drum—if they were pounding the bass drum, she would say they were—and then she could keep time with her finger to the bass drum. A great big tuning fork placed here on her breastbone, one like this [gesture], had no effect on her hearing ability because the nerve was just gone.

So we talked to Mother by spelling on our hands for a while. And she became quite good at reading lips. The nurses that we had—one of the nurses, by the way, just died recently. The nurses, they would play pinochle with her, and double solitaire with her, and they would even read to her once in a while. She very patiently went right along—no complaints about that at all. And she lived a fairly easy life,

plenty of communication with everybody. She just loved to sit and sew, so it wasn't as much of a hardship as it might have been. And she didn't have very many outside interests. When they came to Reno, she did become affiliated with a lodge; I believe it was the Odd Fellows, their ladies' auxiliary. And she participated to some extent in those social activities. But she was not socially adept at all. She was a homebody, and her interests largely lay in the home, and I think she was quite happy to have it that way. My Grandmother Hamm lived with us here in Reno for a short time before her death. And she must have died during the war, because I have no recollection of her death at all. She lived with us at the corner of 801 Lake Street. It's still there, the house, big, white, two-story house.

But as I say, they moved to the Colonial Apartments, where a number of the people there who were almost in the status of retired (a lot of elderly people there), and they were very kind to Mother, particularly a Mrs. [Catherine] Blaney, who was the secretary to Governor Oddie and to Senator Oddie when he was Senator, and she knew a lot about the goings-on in Nevada during her day because of her association politically. And she was also the secretary to the attorney general, the red-headed attorney general, about that time. He came into Reno and opened an office in the First National Bank building, and she was also his secretary. So she had a rather well rounded experience and a knowledge of affairs, and she was one of Mother's best friends, and she delighted to spend a great deal of time with Mother. And she learned to talk with her lips so that this was quite expressive, and also to spell with her hands. And I think that she gave my mother a great deal of comfort and a great deal of pleasure, almost pastime, you might say, until Mother began to have her heart attacks and came to live with me.

And then there were her strokes. Now, I don't know what to call those things, because she was a Christian Scientist, and she would not have a doctor. But she would have a paralyzed condition come about, in which her right side became paralyzed, and her left side was not. Her tongue was partly paralyzed. And her speech was practically gone. This happened at our home I think five times. And I would pick her up, and she weighed two hundred pounds. She was about five feet tall, and she weighed about two hundred pounds, so it wasn't easy. I'd pick her up and take her in, put her in bed. And the nurse would read to her from the Science and Health. And pretty soon, she'd begin to come back. And it wasn't a year, two years in coming back. It was a matter of a couple, three weeks. She would be back as good as she had been.

One of the effects of this hearing loss was a lack of balance. She couldn't be sure of her balance when she was trying to walk. And as a result of that, when she tried to turn, she'd go through a door and start to make a turn from her direction, she would hold onto the doorjamb. And the paint was all scratched out from her fingernails on all doorjambes where she went.

Well, such a wonderful woman, such courage and patience. She just had a wealth of what it took. And this was not something that she consciously fought for. She had it. That's the kind of a gal she was. Wonderful! Wonderful!

And when she died, as I think I told you before, she had a nice chicken dinner. I was in Bishop and I was going to receive a life membership and a plaque, and so forth, in recognition for my services to the International Association of Building Officials. And I got a phone call from Johnny, said that Mother'd had it. And that she'd simply had a nice big dinner and played some

cards and laid down to rest. Never got up, and that was good enough.

Well, I can't think much of anything else of Mother. She's always been an inspiration to me. I've been a fellow that has not been noted for patience and that sort of thing. And knowing her helped me tone down greatly—very greatly, as a matter of fact. Of course, I bubble over once in a while now, but not very much.

Well, that's all I can say about Mother, I guess. She was just really great. Oh, she was, I tell you! She was something.

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## COLLEGE YEARS: THE UNIVERSITY OF NEVADA

I went to work in Gray-Reid-Wright's after high school in the crockery department, where I managed to break quite a bit of Haviland before I was finally let out, and entered college in 1911, class of 1915. There was nothing too interesting in college. I played football, baseball, and basketball while I was there.

I sang in the glee club. As a matter of fact, the one interesting thing is that my parents, had a little financial trouble along about that time, and to make my way in college, I started singing as a bass soloist. And I would sing for the Chamber of Commerce when they had affairs. And they took trips, like up to Susanville and Alturas on the old Nevada-California-Oregon narrow-gauge railroad. I'd sing part of the entertainment up there. And I sang for Elks smokers. I always had a job in the churches that paid twenty-five dollars a month, and it was a really plush job in those days. And I sang in the Presbyterian, the Congregational, the Catholic, the Christian Science—sang in those four churches almost continuously while I was in college. And that's

the way, also, that I made most of my expenses in college.

One highlight here that should come later (but I don't want to forget it) is that later on, when I came back from the war, we had a quartet. We formed a quartet. And we sang for money at various places, and one of the engagements we got was at the Majestic Theater, where we had a six-month engagement singing between pictures. They were silent films. And we would sing for them. And then they usually were raffling off an automobile, or something, at the theater. And as they would explain this to the people, we would be singing.

I remember a couple of incidents there that were real funny. A man named Galls, a tenor who later became the leading tenor for the big Chicago—not glee club, but they had a big singing organization. He became their lead tenor. He was very good. He and I were doing duets for, a while. And he stuttered when he talked, but never when he sang. And he always was afraid that I would forget the words to our songs (which I did at frequent

intervals). And on one night, we were singing for a big Masonic Shrine doings, and the theater was loaded with Shriners. There was just one mass of red hats. And we were singing a song. Right about that time, they'd have two kinds of choruses to a popular number. One chorus would be a melodious kind of dance tune, and the second chorus, we'd da-de-daddle-de-da, real fast—lots of words. And, of course, that's what I forgot. And instead of shutting up, why, I started to do a dance. And for about two or three bars, or lines, I did this little dance, and [laughing] I could see Galli out of the corner of my eye. He was as stiff as a poker. He was absolutely flabbergasted! And I got the next line, finally, and went right on with the song. And everybody laughed and just thought it was part of the act. I got by that.

Another thing that happened with Galli was we were singing a song called "Gallagher and Sheehan." I would sing one line, and he would sing the next one in answer to me. I would sing maybe two or three lines, and—"Oh, Mr. Gallagher, oh, Mr. Gallagher, deedle-de-de-deedle-de-de-de-de."

"Oh, Mr. Sheehan, Mr. Sheehan," in answer, you know.

So one night, just for fun, I made up a little verse. I didn't tell Galli about it. [Laughing] So here we are with this guy that stutters and gets real stiff. I threw this verse at him on the stage at the Majestic Theater. And [laughing] he—he—all of a sudden, I saw him go just—. And then he got so mad. He was an Italian, and he—oh, how mad he could get! His face almost got red immediately And he came right back! I don't remember what it was, but it fitted well enough so that nobody knew the difference.

Well, sometime later, we went with the Chamber of Commerce to Alturas, where we were to put on a show. And they had all

the farmers in the country in there with their foods. They stacked up a big table at midnight. We ate and what have you, you know. And we were singing "Gallagher and Sheehan," and the dog did the same thing to me. [Laughing] He threw a line at me. I don't know what I did. I said something.

Well, getting back to the University, of course, the first thing we did when we got into the University—. The few men that I guess I just met when I went to the University had been in prep school. At that time, the University had a preparatory school. And we got in, and they had two fraternities at the University, the THPOs and the Sigma Alphas—I don't know; I've forgotten what the other one was. But we didn't get invited to join a fraternity. So we decided we'd start our own fraternity, which we did. We called it Phi Delta Tau. And we got a house. Our first house was on the corner of—where was it? First house, yes, the first house had to be on the corner of Ninth Street and Sierra. It's still there, right across from the present P1. Phi house.

And we weren't doing very well -rushing. So we decided the best way to rush was to get the luggage of the boys who had come to college and take it up to our house—let 'em come up and get it and stay. So we went down to the Sigma Alpha house (if that is the name of that fraternity), which was on Virginia Street, about Seventh. They had a little bulldog that they kept right up in the gable. They were very proud of that. First, we went down to get the bulldog. nut then, there were several students registering in the University from Modesto, Ernie Holcomb and Cy Young and Chink Talmadge and Ole Johnson—. They all had money; they could pay their room rent, which was what we were looking for. So while we were there, we just transferred their luggage (which hadn't been

unpacked) up to our house. Well, what the heck) They didn't care. Tie looked like a good, active organization, so they came up with us, with the result that we had the baseball team and a good part of the football team in the Phi Delta Tau house for a while. Well, later on, the Phi Delta Tau went national and became ATO, and we became much more civilized, I guess.

One of the things that we used to do at the Tau house was one of our boys from Wells (his name also was Ole Johnson) would get a suckling pig from his father at Thanksgiving time. And I think we had three Thanksgiving dinners in that house. And we had suckling pig for all three of them, and we had the girls come. (Of course, we had the usual elderly people to take care of the amenities.) But we had wine. And I want to tell you that we just nearly got thrown out of the University for having a glass of wine at our Thanksgiving dinner. But we did it anyhow, and nobody threw us out.

There was another incident in college. I was in an English class. And this was, I guess, in my freshman year. It was. [Gustavas Swift] Gus Payne was the English teacher, and I thought of Gus Payne as a pretty much of a prissy sort of a guy. And I wasn't getting much out of the English. I didn't care for the class. I wish I hadn't gotten into it. One day, it just struck me that maybe I'd just take a smoke. So I lit up my pipe and I ducked down behind somebody, being dumb enough to forget that smoke goes up. And Gus saw the smoke and ran me out of his class. And that suited me fine. So I refused to go back. And the scholarship committee, which, at that time, consisted of Professor Haseman (who was the director of the glee club, by the way) and Kate Riegelhuth, and, of course, Hartman, the president, they called me up and told me I had to go back, and I wouldn't do it. And

the result of that was I got—. Also, Hartman then registered me in sophomore physics as a freshman. And I had no calculus. )And I didn't pass my sophomore physics. The result was that my whole college course was fouled up because I had to take my physics the next year. I had to take my English. Instead of that, I took public speaking, I remember. And I wound up taking the three required courses in mathematics as a senior, all three of them, and passed them with good grades. Not as a senior, it was the senior year, but I had been out working for a while.

Another thing that happened there, this Hartman, in taking his physics course, I discovered that he had written the book that we were using for a manual. And he'd also put the acceptable answers to his physics experiments in the back. So I decided that the best way to do physics experiments was to take out the equipment, and then find out what the answer was, and cook up a set of results that produced the answer, and—fine and dandy.

So one day, I had an experiment which is called the "coefficient of friction." And this coefficient of friction was about a four-hour experiment. Hartman had begun to suspect that my results were way too perfect for the time I spent. He also checked up on the time; he began to put in the time you take the stuff out and the time you take it back. And I didn't want to wait for any time. I just wanted to get out of there. So while I was working up this experiment in the coefficient of friction, he came in. I didn't even have the apparatus set up, and I had the experiment about done. I want to tell you I got through doing that experiment at six o'clock that night. did every single bit of it, and did it over if it wasn't right. And he was right there with me. Well, this glee club, Professor Haseman was the director of the glee club. And radio in

those days was almost nonexistent out over the state. The result was that they didn't hear quartet music and organization music or choral music that was fun, particularly in the little towns. So we worked up a show. And the first part of it was serious singing, and the second part was fraternity house singing in which we did all kinds of silly things. And we arranged tours. The first tour was a week. And we went out to Lovelock, Winnemucca, Elko. And Wells we stopped at because Ole Johnson was a tenor in our outfit and they wanted to hear him in his home town. And then out to Ely and Ruth and McGill. That would be one tour. And I remember that Prof Haseman had a little trick that he would do on every stage that we were to use—we went in to see what it looked like. And this guy, who was about six feet two or three and weighed a couple hundred and-odd pounds, would walk out to the edge of the stage and throw out his arms like this [full spread] and say, "Even the seats were in tiers! Wah, wah, wah, wah, wah!" He never failed to do it [laughing].

When we got out to Wells, fig Johnson had to sing a solo, and he wasn't a solo singer. He was very nervous about it. Wells Valley had a lot of Indians, of course, and a lot of ranchers, and everybody came in because his father was very prominent. And this little bit of a place, with benches and sort of sloping seats, and way in the back where the Indians sat, was loaded. And the lights were Coleman lanterns. One of the Coleman lanterns was hanging right down over the front of the stage, about seven feet up. And Ole Johnson couldn't go anyplace but right there, underneath that lantern, to sing his solo. He was nervous as all get out to begin with. It was hotter than hell, besides! And he had tails. We dressed in tails and white vests, the works. And here he is, all dolled up, stiff collar up to here [gesturing to jaw line], trying

to sing a solo [laughing], and the heat coming down, perspiration coming down. [Laughing] His collar started to wilt. I've never forgotten what a miserable guy he was!

Oh, I was in a skit, too, that made the memory of most of the people, called "Romeo and Juliet." I was Juliet, and my balcony just consisted of a chair with a screen in front of it. And I had some of the women in one of these shops make me a wig. And I had a sort of long gown on over my stuff. So here I am up there. Ole, who was a very small fellow, got a very tight-fitting—like panty-socks, you know, tight but all over, arms and everything. And then we took paper and we stuffed it in the various places to show muscles. And he had a sword that dragged the floor, it was so long. Put that on. And then, first, the glee club would come out [singing], "This is the story of poor Romeo," and so forth and so on, and we'd do our singing. And it got quite a hand every place.

Well, one time, we were doing this at Carson [laughing] for the legislature in the old theater there. And the old theater had some boxes that were over the stage. And they had red velvet curtains over those boxes. And at the end of our little skit, I sang my part from the box. And Ole, at the end of the skit, grabbed a ladder which was handed to him from the wings and came up the ladder, got in. I pulled the velvet curtains closed, and there was a (laughing) sign on it, [laughing] said, "Busy," which made quite a hit with the legislators.

Another thing that happened down there where the glee club that was funny—these things aren't what you'd call [laughing] anything about the life of a busy man. Anyhow, Tom Walker was the second tenor and a very good singer. And he had two solos. And he sang things like "Kiss Me Again," and that sort of romantic song. And we were

down at the Leisure Hour Club in Carson. Oddie was governor. His bald head was right in the front row. We had a nice, big audience there. And, of course, the stage was just a platform with a couple of doors on each side [so] that you could get onto it. And the lights were just bulbs. We had one of these lights in the little anteroom that we were waiting [in] for our turn to go on, and we were dressed up for our Romeo and Juliet. And Tom was out there, singing [singing], "Just a little love, a little kiss." And we noticed that our shadows went through the door and appeared on the back wall of this stage, and quite plainly, too. So immediately, there began a [laughing]—a shadow graph. And the audience began to snicker, and Tom [laughing] was up there, "Just a little love, a little kiss," and getting worse and worse off, [laughing] until he just finally was flabbergasted! They're laughing at him! And he thought he was doing all right.

Well, he came back [laughing] to the door. He had to do two songs. We weren't ready to go [laughing] on with other stuff. And he poked his head in, and we were still messin' around with it, so he got the idea. He said, "You sons of bitches!" [laughing] He went back out and we got off his back for the rest of the song. Well, out in Ely, too, when the glee club got out there—. All those little towns in those days, they had university clubs. And they were social organizations. They were going concerns. And in Ely, they had a big one, with their own bar, and quite a good-sized clubhouse—no rooms or anything, but public rooms in there—one-story thing. And we heard rumors about a big badger fight that was going to be put on. And they really worked it up. We were there either two or three days—Ruth, McGill, and Ely—I guess we were there three days. And this badger fight started, and there were a couple of fist

fight (we know now they were [laughing] put on for our benefit), and lots of bets made about this badger fight.

I happened to know about the badger fight. I'd seen one pulled up in Austin. So came time for the fight to be pulled off on our last night. We came in after the show, and Louie Rose, a tenor, one of our tenors from Modesto, said, "I'll pull the badger out!" Maybe the people don't know about a badger fight nowadays. [Laughing] There was a dog, all right. And somebody was holding the dog, the man that owned the dog. George McCreary, a student for the ministry, said he was going to "help" Louie. And the two of them got hold of this rope to pull out the badger. And Alton Glass decided that he didn't know just what was going to happen. And there was a limb of a tree about this high [four feet], and it came out like this [gesturing]. And Al jumped up in order to see better, (laughing) and sat on the limb.

Well, when it was over, everybody went to the bar. And we didn't have a nickel between us. And the bill for the drinks was ninety-some dollars. And we were stuck with it, the glee club. So Prof Haseman took it out of our treasury and [laughing] paid the bill, ninety-some dollars. Why, that was a fortune!

This glee club, at the end of the year, usually had, oh, eight, nine hundred, a thousand dollars in the kitty, and they would split it up among the boys. And on one trip, we took a mandolin club along, also. We took quite a gang of people along. I remember that we put on a show in Tonopah, and it was Easter. And Earl Ross, as I understand it, had studied some for the ministry before he came to Nevada. And he was on our glee club. And we went down to Tonopah and we put on our show, and the next morning we were waiting for the train. (You went down there by train in those days. You left at nine o'clock at night

and got in in the morning, and you came back in the daytime.)

So we put on our show, and the next morning, some of the fellows said, "Well, why don't you put on an old cap and an old shirt, old coat, and go out there in front of the Mizpah Hotel and sing and then pass the cap?"

This was Sunday. And it was Easter Sunday. And we had had an appearance with the Masons in which we had several Easter songs which we had learned. So we had a good program. Well, I put on the coat and the cap, and I went out and I sang a couple or three bawdy songs there, and I passed the cap, and good Lord, I picked up eight or nine dollars. And the boys said, "Now, we'll give this to the girls because they're going to send somebody to Asilomar" (which is down around Pacific Grove).

Well, we got into the train. We were in a day coach, and there were a lot of people going to San Francisco that were in a sleeper in back of us. Well, we got to singing in the day coach. And we sang a few of the religious numbers that we knew. And then one of them, Rosie, I think it was, who had a ukulele, he took the ukulele and passed around the car and picked up several dollars. And the conductor came in and said, "The people in the road car want you to come and do that for them." So we went back in the rear car, and Earl Ross then gave a little sermon, about two minutes, but it was, nevertheless—. We put on a regular program. And we passed the hat there; we got thirty-some dollars. And we gave that all to the girls for their trip to Asilomar [laughing]. So we had a lot of fun with that glee club.

Athletics, I've told you, I believe, I was a pitcher for the baseball team. And I played breakaway on the rugby team. I played front rank at one time, and then breakaway on the rugby team. And I was the center on the

basketball [team], but Hungry Henningsen was the regular center. I got ruled off because I knocked a University of California guy colder'n a wedge. The son of a gun would twist my arm behind my back when we went up, and Inn down and jumped on him, finally, and his head hit the floor and he was out, and they carried him off, and Si Ross threw me off the team [laughing].

Of course, we had our rushes in those days. We had a cane rush. We won our cane rush in something like fifteen seconds. They never touched the man who was running with the cane. Mid then we had the usual rushes in which a dummy was put up on the flagpole. And they would try to take it down—it was a big wrestling match, and you usually wound up by throwing everybody in the ditch. And I can still remember Joe McDonald, who was a member of my class, standing down there in the ditch. He'd been thrown in there himself. And he was wet, he didn't care. "Throw me another one!" [Laughing] Somebody'd throw him down a freshman, and he'd kneel on him under the water [laughing].

At that time, I lived there at 801 Lake Street, just a block from the University. That house is still standing, too.

Oh, yes. Well, I'll give you some on Charley [Haseman] later, I guess. He was a very choleric Dutchman. And he and Si Ross were buddies. They roomed together. Charley was engaged to marry Emily [Coffin] and Si cut him out and married her himself [laughing], and they quit living together right now [laughing]! But he lived with the coach of the football team at the time, whose name now escapes me. He had a house where the Wolf Den is now located. And he kept a barrel of beer [laughing] in there, and the boys would—you were welcome to drop in at any time, sit down, put your feet up. And [N. Raymond] Ray Penry of Gray-Reid-Wright's

was a baritone who was a very good singer, and he had a house out on Wells Avenue. You know, the streetcars used to go out there. And we'd go out for a night of singing, and so forth, at Ray's place.

Another thing we used to do was go down to a bocchia ball, or some kind of a bowling thing. It's about twenty feet long and got a lot of little paddles in the end and you throw a bowling ball at it. And you bowled for drinks. We used to do that [laughing].



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WARTIME ACTIVITIES

But about that time, the war hit. This was in 1917, by then. And on July seventh, which was pay day, three of us, [Horace) Fat Barton and Ted Bacon—the three of us took our pay and came to Reno to say goodbye to our folks and to go down and enlist in San Francisco. These two fellows decided they weren't going to enlist, just be privates and stuff. they were going to get some kind of a special rating.

Well, the first thing that happened, I visited the enlistment bureau, or whatever they call it, on Second Street here to ask some questions about enlisting. And he enlisted me; I didn't know it, and I didn't tell the boys that I had been enlisted. I didn't know I'd been enlisted. So I told them what I'd found out, and we said, "oh, I don't like that." So we went down to San Francisco, and we were getting no place fast.

And finally, one of the men in one of the places that we used to frequent said, "Why don't you go and—they want some guys for radio operators. They're going to send them straight to London. They're absolutely desperate for operators overseas." Well, this

just hit us between the eyes. But how to get enlisted as a radio operator? so we went down to see about it, and he said, "Well, you go down to the Marconi school and you get a certificate that you can take five words a minute, and we'll enlist you." So we went to the Marconi school, and it was going to take quite a time learning to take five words a minute, so we gave him ten bucks apiece. And he gave us a certification, and shortly after that, we were on a carload of operators. We were the only people who did not know anything about it. They were crack radio operators, armatures, and also land wiremen from the newspapers. These were all fellows that knew [laughing] what they were talking about! But this didn't bother us too much. We had a lot of fun going back to Harvard.

Well, we left the Charleston Navy Yard, and the thing that happened on the way was somebody stole the chief petty officer's valise in which he had all of our enlistment papers. So when we got to Charleston Navy Yard, we had no papers. "Well," they said, "okay. We'll send and get some duplicates.

In the meantime, we'll test you." Why, we didn't expect we were going to get tested! Ridiculous!

So when they tested us, they started to find out what they were going to do with us. And they decided they'd send us to Harvard to study radio. Well, we went to Harvard, and there I studied radio and played with the Harvard football team. Well, there were five thousand men at Harvard at the time, all servicemen. And it was the service team that I played on. I played tackle, left tackle. But I discovered that the people who were giving the—each course lasted a week. And I discovered that the people who gave these courses were men from the fleet, who were not teachers. They were practical men, most of them. But when it came to theory, why, they were a little desperate.

So I propositioned them. I said, "Look, I'm an electrical engineer. We glad to help you out. And this worked all right. I helped them out, and at the end of about two months, out of five thousand men, I was the top student. All of my books that you handed in at the end of the week, you know, they—4.0's. They were perfect, because I marked them [laughing].

So Professor Pierce, who was the professor of physics at Harvard at the time, had been asked to go to New London, Connecticut and work on some experiments for' underwater listening to detect submarines. And he took a look at the marks of all the people in the [laughing] school, and here is a guy that is just a genius, that's all! So he got me, and he said would I like to go to New London in submarine listening? Well, I immediately envisioned we were going out in submarines and having a real good time, you know. So I liked it. And also, he got Fat Barton, one of the men that I'd enlisted with, to go with him, and Ted Bacon. (Ted Bacon's father used to have a stationery store on Virginia

Street—or, I don't know, a stationery store or a bakery.) Anyhow, rat and I went to New London. Ted did not go to New London. And I remember Ted got so disgusted with just teaching (he became a teacher) that he decided he'd go see some baseball games. And so instead of teaching, he went out to Braves field or what—Fenway Park when there was baseball there, and they finally wound him up with his seabag on his back. And he went to London, and he spent all of the rest of the war going from Portugal to London and back to Portugal, bringing creosoted ties, Woods of various kinds, [Laughing] Boy, what a job he got into!

Well, Fat was soon sent to Stevens Institute in New York city to study for an engineering ensign. And he became an ensign. And I became Professor Pierce's top laboratory man. I stayed right there in New London until the war was over. We had a very successful experiment that had to do with the transmission of sound through water. Sound travels about four times as fast through water as it does through air, and you can detect it at as much as two and three miles from a ship. A submarine underwater makes a very definitive sound, a very distinctive noise; its motors, and so forth, give a high-pitched hum you can't miss.

I can remember that we used to have to go out on Long Island Sound with our experiments. Three or four laboratories would send their head laboratory men with one of their experiments. And we'd drop them down through a hole in this raft, which was about almost as big as this room—not as big as this room, twenty feet square—in a hole in there, and were rolling around the hole, and your experiments are dropped down there, and you listen to the traffic as it goes by and see if you can determine whether you're hearing the sound of the propellers, or whether you're

hearing the sound of motors, or what the heck it is.

Well, one day while we were out, they sent a submarine to cruise around us. And we were not listening. We were humped with our hands in our pockets and our shoulders up under our ears. Oh, it was cold out there! And we didn't do too much listening. Most of these experiments weren't working, anyhow. So when we made our report on that day, we didn't say anything about a submarine. And I tell you, we sure got it! They told us that we'd sure know when there was a submarine the next time, or else!

Well, one of the boys said, "you know, I noticed something that was kind of phony." He said, "All the traffic that usually went by us just almost disappeared, It was way away from us when that submarine came around." He said, "I'll bet you that the next time a submarine is there, we'll notice that the traffic isn't there." That was true. And we never had any more trouble about submarines.

Well, I'll tell you. Maybe they'd be interested to hear about a couple of them. Professor Pierce's experiment consisted of using telephone transmitters that—I don't mean a big horn on the end of it, but the little bit of a container that held the graphite or the carbon, or whatever they used. They used twelve of them, a foot apart, in a big pipe, a three-inch pipe. And the theory of the thing was that when a sound wave from a ship or a submarine—from any source—hit, it was set at, we'll say, a mile. It was practically straight, although it was actually a circle as it came out from this single source (it came out in all directions), But at a mile for that twelve feet, it was practically a perfectly straight line. And if you were at an angle to that line, it would hit the end microphone first, and then the next one and then the next one and then the next one, and so forth. And the way

we told directions was that we'd put some capacity into the forward mikes and some [inductance].

You put the [inductance] in the front one to slow it up. And you put the capacity in the back one to speed it up, so that they come together. In other words, the sound waves of this, here, are this way [jagged], and the sound waves here are this way [curved], and they are not in phase. They fuzz everything up. But in this system, what you did was to bring every one of those receptors, every one of those telephone mikes, into phase. And you were tapped off right there in the center of this, and you had earphones on. And what you heard when they were in phase was an increase in the sound and a definition of the sound, and it felt in your head that—this is called a binaural sense. The sensation in your head was as though you were shaking water out of your ears. It was a physical sensation, right up here [in forehead]. When you got that sensation (and you got it by turning this compensator, a handle, which did the very thing I'm talking about, electrically), then you took a reading. This, now, is the same thing as though I had turned that pipe right, the same way the wave was. As the wave comes in here and hits all these things, it fuzzes up the sound. You have the same thing as if you had turned this flat to the wave, when you do this electrically, and it hits the whole thing at once and gives you the maximum possible sound.

That was his experiment. We would go out in three chasers, a mile apart. And there would be three listeners on those chasers when we were finally testing his experiment. And one of them would say, and have such and such a bearing." The next one would say, "I have it, such and such a bearing." The next one, "I have it, such and such a bearing." And they continued to work on it for maybe a minute until they could feel that they all

had it for about the same place. At a mile, we could locate a submarine within about three degrees with his [experiment].

Another experiment t worked on had to do with capacitors, another experiment in' which they could tell directions. This was not very successful—no use talking about it, really.

But they had there at the experimental station probably a dozen very prominent scientists working on experiments from various angles. This one that I worked on was at that time the most likely to succeed—they weren't getting any real place.

They did have a system they designed on the principle of a hot wire ammeter, and that's as far as I go with that one. But they put them in mines. And they put those mines, we'll say, a hundred and fifty feet apart around the submarine base for the Germans. And they'd have them a hundred and fifty feet apart horizontally and a hundred and fifty feet apart vertically. And if a submarine with its equipment running came within seventy-five feet of one of those mines, it would explode it. This, the hot wire ammeter and its connections and the system in which it was used, would set off the mine. And at seventy-five feet,. one of those mines would spring leaks in the submarine.

And I remember that they had a committee that was in charge of our station. And Henry Ford and Thomas Edison were on that committee. And Ford made a speech at our station one day, which I overheard, in which he said that if this war went on another six months, no German submarine would come out of their bases, that they would be able to detect them and destroy them. Well, it didn't last that long, so we don't know what would happen. But that was one of the top experiments. And, of course, nowadays, it's completely useless. But that's the best they could do then.

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## INCIDENTS OF MY EARLY CAREER

It was in 1913, I have already told you, that my folks ran into financial difficulties. And this is about the same time Jim Scrugham sent me to Elko to work on the Elko-Lamoille Power Company's project. At that time, it consisted of a hydroelectric plant in the Ruby Mountains, about seventeen miles south of Elko. There was a dam and a power plant. The level of the water for the dam was some nine hundred feet above the power plant. And I started there as a laborer carrying dynamite, boxes of dynamite, to the dynamite men on the grade. And shortly thereafter, I became the timekeeper for the layout.

This job had two camps. The lower camp, which was three miles from Lamoille, in the canyon, in the Lamoille Canyon, consisted of the executive offices and the power plant building itself. The upper camp consisted of a tent city for the employment of the men working on the grade. Most of these men were IWWs (Industrial Workers of the World), and it was a pretty rough company. The cook for this upper camp, who had some sixty men to feed, was a Chinaman who worked

over an open fire. They would get mountain mahogany and bring it down, and he would create a bed of coals in a little rock enclosure about three feet one way and, say, ten feet the other. And he had a cast iron grill over the top of it. And he cooked for those sixty men on that cast iron grill. When it rained, why, he simply put a piece of burlap and a blanket over his back and went on with his cooking. Mid the rain didn't interfere with the coals; they took it.

Well, about my third year of college, finances got to be pretty bad, and I decided to get a job. So Scrugham, who was the dean of engineering, I guess (I don't know whether he was a dean or not; I think he was), he said, "I'll get you a job." And he sent me out to the Nevada Hills mine, which is about sixty miles southwest of Fallon, up in the hills, as an electrician. I had studied electrical engineering with him, and I'd been rather apt at it. So I went out there as an electrician, and, of course, the manager of the mine, McDonald, knew very quickly that I didn't know too much about the big equipment

that he had, but he was a nice guy, and he helped me.

And they had a pumping station five miles away from the mine where they got water, pumped it up to the mine. And they had in that a motor which was called a single-phase motor, Wagner single-phase motor. And it had little shorting weights in it, and they burned a little bit and they'd shut the motor down, and I'd have to go over there, take the motor down, file those things off, and get it back in operation. So one day I went over there, and I'd just finished with the motor when somebody at the mine threw the switch. I always threw the switch and put a "man working" sign on it. Somebody threw the switch anyhow. The juice came on, and where could I be standing, but with this thumb just between the great big gear and the little pinion gear that operated for the motor. And the thumb went right through it, like that. So, of course, it was hanging. I called up. I told the office that my thumb was cut and I was coming in.

And they said, "What?"

And this telephone line was just laying over the bushes and it blew out a static. And I got the idea that "thumb" was kind of guttural, and I'd say something they could be sure they heard, so I said, "My hand is off."

And he didn't wait for any more-. He just said, "Oh, my God," and cut it off. And then I had to decide whether I'd come over the mountain to get back or whether I'd go around by the road. And I thought, "Well, I'll go around by the road. Some guy might get smart and come out with an automobile." So I went around by the road, and the superintendent of the mine and everybody he could grab came over the hill. And when they got down and couldn't find me, they decided that with my hand off, I'd wandered out in the brush and bled to death. So they searched all over, every place.

In the meantime, McDonald decided, "Well, I know that chicken, He's going to come by the road and hope somebody'll pick him up." So he drove a car down and picked me up and brought me in. And the doctor, I remember, [laughing] he had a bottle of iodine that high [gesturing], and he just poured iodine over it. I don't know whether it did any good or not. It didn't hurt. I had tied a string around here [base of thumb] and stopped the bleeding. But when we got started for home, it began to hurt, all right. And by the time we got to Fallon—oh, going across that flat, that mud flat, we had to go around a big wagon. And they just unhitched the mules and pulled us right through the mud around the wagon and back up on the road [laughing].

Well, I got into Fallon [and] they gave me something for the pain. The train was due at, I think, ten minutes of one in Hazen. And we were just kitin' to get there. And ten minutes of one came, and we still had ten minutes to go. We got in there at one o'clock, and the train got in there at one o'clock. So I got in here about two o'clock in the morning. It was November seventh; it was an election year, an election night. This guy [Dr. Stadtherr] who I wanted, who was for the Nevada Industrial commission—now, you know him so well. He's in Salt Lake City in a home now—not a home, but he went nuts. Anyhow, he was at an election party at the Riverside Hotel and he was pretty well oiled. And they called him from the hospital, which, at that time, was on California Street and Humboldt, I think, where that school is [Reno Business College], Lander and California. That was the Mount Rose Hospital. He came out there and met me, and he said, "I'm going to take it off right down here."

I said, "Oh, no, you're not. I'm not going to have just this for a hand."

He said, "If you don't, you'll lose your arm."

I said, "I won't lose my arm. Take it off here."

You can see where the flesh was, from here and from here [at the base], it was hanging, and the bone stuck straight out. He snipped off the bone. Oh, I tell you, I never felt so good in my life as when he gave me a little anesthetic down there! Brother! He snipped off the bone and sewed this up, and as I say, he was oiled, and he just pssh, pssh, pssh, pssh, clap, clap [demonstrating the doctor's quick precision in the operation], and left! I never had a bit of trouble with that thing! Stadtherr! That's the guy! I never had a bit of trouble with that thing.

So, what to do? I went out to McGill on the survey crew. But before I'd been there very long, why, I was put to drafting for the structural steel. They were building [a] powdered coal plant at the time. I became a draftsman there. And I designed some of the launders\* that went into this plant.

Well, when was this? It was after I came back from the war and before I went to work with my father. And [Fred de Longchamps] asked me to come up and write specifications for a while. I hadn't even had the little experience I had with my father at that time, but I had worked in his office. Fred was desperate for someone. So I came up, and I did write specifications by reading over like specifications for other jobs, and so forth. And then he asked me to go out and supervise the construction of the grammar school in Elko. This was about 1919, I guess. After that, he got two jobs in Winnemucca, the Winnemucca courthouse and the Humboldt Hotel. And he said, "Now you can supervise those as well."

Well, to begin with, the road between Winnemucca and Elko, Highway 40, was a

mass of chuckholes, and the fine dust would gather in these chuckholes and you couldn't see them. They'd break your axle if you went into them too hard. So in order to supervise these jobs, I made the trip from Winnemucca to Elko over back roads. And since Bill Wagner, who was on the job as a roofer (he was a plumber, but he started doing roofing), was working there—yeah, we'll say he had the plumbing and heating, not the roofing at that time. He bought what was then one of the top cars in the country, a Chevrolet, a "Baby Grand" Chevrolet, and he would go with me to Winnemucca.

Well, we went up to—oh, the town north of Elko, forty, fifty miles, [Tuscarora]. Anyhow, we went out in that direction and over the mountains, and at about two o'clock in the morning (we always went at night)—at about two o'clock in the morning, we hit a place called Midas, which was a mine. There was a woman there who ran the boardinghouse for the men, cooked for them and so forth. And at two o'clock in the morning, or whenever it was when we got to Midas, we Hammered on the door. And this woman who seemed to me to be about sixty then—maybe she was only forty (laughing), I don't know. But she always wore a very heavy white—dirty white—nightgown. She'd come to the door, "Come in, boys! Come in" So we'd come in, and she heated up the stove, cooked a real feed for the table and we were about to eat. I can see her now [elbows on the table, receptive], "Now tell me!"

What she wanted was all of the gossip from both Winnemucca and Elko, everything that was going on—who was runnin' around

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\*a trough which picks up gravel, sand and waste materials and carries them away in a stream of water.

with whose wife, everything you can think of, she wanted to know about. Oh, we told some beautiful lies to that old lady. But, bless her heart, she needed something of the sort. She didn't have any newspaper, you know, or anything like that.

Well, the Elko job went along rather smoothly except for one thing. The man who was doing the ornamental plaster work (and there was a great deal of ornamental plaster work) —doing the ornamental plaster work and the cast cement work died, and it became necessary that some other contractor be secured to do it. Well, there was no other contractor in the state of Nevada in that line. And they got the Golden State Plastering Company, or something like that, from San Francisco, to come up and do the job. And Fred said, "Now, we're not going to pay the Golden State—" He said, "We're just going to pay them wages and buy the materials, and you're going to run the job." And I'd never made a piece of plaster in my life!

Well, they sent up a couple of modelers. And since we didn't have any modeling clay, we bought some fire clay from the railroad. And they made the models of this big cornice. The cornice was actually six feet high, and it was around a building that must have been two, four, five, six—it must have been between five and six hundred lineal feet of it. And they made the models. And then finding that they really had us over a barrel if they quit, they wanted more money, which we gave them. And then from the models, you poured glue over the plaster after this model had set. You poured glue over it and threw hemp in with the glue, with the result that you got a negative of the cornice, which you then set down and poured full of plaster with hemp backing for it. And when you got through with that and you took it out of the mold, there you had a section of the cornice. Well, we got by with

that all right, and we put it up, and I said, "Now, I'm darn sure that this is going to take a lot of water, and it's going to come to pieces in just no time at all. So why don't we treat it with oil?" So that's what we did. We oiled that whole thing. And the result of that is that that cornice, which was just plaster of Paris and hemp with oil, lasted until about, oh, ten, twelve years ago, when they tore it off. Well, we got down to Winnemucca, and the interior of this building had all kinds of staff work. Staff work is ornamental plaster, really. And the woodwork, the studding and so forth, of the walls, was a little out of plumb, it was a little out of square, and it was a little out of level. So in order to have the finish work look as it should, we had a level which consisted of a long rubber tube. And on each end, there was a glass insert that had marks on it so that you could judge the level of the water. We filled it with water, and then put that up on this wall over here, and put it up on this wall [gesture]. And when the water was at the same mark on both walls, then that was a level point. And then we leveled the ceiling, we plumbed the walls, and then we plastered. Some of that plaster in that building was real thick on account of the walls being out of line. And the staff work went up. It was really beautifully done.

Well, on that job, we had a lot of terracotta for an outside cornice. And the little guy who was in charge of the terracotta work, or had the contract, was Canadian, practically a Cockney. At the same time that he did this work, he was doing a new post office in Winnemucca. And the guy from Reno who was doing the heating and ventilating was putting in smaller pipes than were called for on the plans. I was rooming in the same rooming house with the inspector for the post office, the federal inspector. And he told me, he said, "Son, you're going to get yourself

into trouble unless you keep very good track of what's going on here." And shortly after that, he went on a vacation, at a time when the walls of his post office were going up. And the post office was to have grouted brickwork. C-routed brickwork means that you make a very thin grout and pour it into the wall with the brick. And it makes a solid wall that is very hard to tear down.

Well, the minute he went on his vacation (laughing), this little Cockney decided that this expensive grouting didn't need to go on any further 'till he got back. So he built [it] up out of ordinary brickwork. Now, the little devil could see, as he stood in the street, where he started to build ordinary brickwork, because the dope, the grout, had not run down over the outside and dirtied it. It was perfectly clean. All the way down to the ground from there was a dirty wall. And, of course, as soon as the superintendent got back from his vacation, why, that all came off, and they did it again.

This little Cockney, he raised Cain about doing the terracotta work because he said it came in too big pieces and it was too heavy, and he couldn't line it up because it shrunk.

Terra-cotta, by the way, as they made it in those days, was made with a thirteen-inch rule for a foot, a rule that was graduated in twelve graduations, was thirteen inches long, because terra-cotta shrunk that much from the time it was made as raw clay to the time it was burned. It shrunk that inch. Well, there was a contractor named Williams who had had the job. He was working largely in the Sacramento Valley, so that the people he had in Winnemucca were not particularly qualified. They weren't any great stars either as mechanics or in his key men. So the bank who were lending the money got very fussy about this job and decided that he should be fired. I'm trying to think of the name—

vein (laughing)—. Well, anyhow, the thing was that they were going to fire this Mr. Williams. We had just started the foundations. The excavation had been completed. The question was, "Who's going to carry on with it?" Shea and—I'll get that name pretty soon. Well, the decision was that I should build the foundations, and that they would let a contract, then, from the foundations up when I finished with the foundations. [Laughing] My God, here again, I'd never built any foundations. So I had to go down to the river and bring up a lot of sand and go someplace and get some gravel and build forms and build the foundations, get everything right, which I was able to do.

But the thing that was interesting to me was the little gossip that came on about this man Williams. He didn't sue. I don't think he was very happy with the job, and he was happy when he got fired. But they told a story that he'd been on a job in Sacramento for the state (I don't know where the job was), and that after he got—the job had been let, and his contract was signed, he went to the authorities and said, "Look, there's no roof on this building. And I have estimated the probable cost of installing a roof at \$50,000." (I don't know whether we want to use this or not, certainly won't want to use his name.)

It developed that there had been a change in the architect's plans in order to cut down on the cost of the building, and that in putting the drawings back together, the sheets which delineated the roof and the sheets, which, strangely enough, specified the roofing, were eliminated. And this guy just simply said, "I bid on what is shown. This is what you gave me."

And I don't know how it came out, but this was the controversy that had arisen, that this was his claim. I'm pretty sure that this was right. I'm also pretty sure that they made

him build the building there, or they'd fired him again, too. But that's how sharp this guy was—actually made a bid. And I don't know whether he had the cost of the roof in his bid or not. Put he said it wasn't on the plans that they'd given him. Well, then, there comes a question: "Prove you didn't get the plans. You signed for complete plans." So there you are. One side, "I didn't have complete plans."

"You signed something for complete plans."

"Well, that meant the plans you gave me"  
[laughing].

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## FERRIS AND SON: EARLY PRACTICE IN ARCHITECTURE, 1908-1932

We started with the fact that Father came to Reno in 1906. And he joined Harry Saviers, his paint company, as a sign painter. He was a very good sign painter, by the way. Shortly after that, he branched out into architecture. He got to do a school or two, and ultimately he did, I think, four grade schools and a high school for the Reno school district. And then he began to pick up some other jobs—a school in Winnemucca, and he had a hotel at Hazen, a hotel in Fallon.

He did the governor's mansion in Carson City. This job had started out to be a job for a San Francisco architect who defaulted in some way. So the Board of Capitol Commissioners held a competition for the job, and my father won the competition and did the governor's mansion.

He [George A. Ferris] writes the board of Capitol Commissioners (this was 1908, August twenty-second), and he says that, "Since submitting our competitive plans for the governor's mansion and resume of specifications and estimate cost therefore of \$24,800, we have carefully figured the

building and find that the building could be erected according to those submissions for very close to \$21,500. We have, therefore, added the following items to the work" (and here they are): three extra coats of lead paint and oak finish, creosote stain on shingles, speaking tubes, vacuum sweeper, fifty-foot hose, steam heat, plaster finishes, screens in all windows, cedar shingles dipped in creosote, refrigerator filled with ice from the service hail; the roof deck would be tin, flat seam.

"We estimate the cost of plan submitted in combination with the above resume of specifications at \$24,800 and expect that competitive figuring will materially reduce the estimate. We are prepared to let the contract at the above figure with proper legal guarantee. Very sincerely yours."

And then he goes on with a resume of specifications which adds all of these extras. And he had extra plumbing and extra wiring, extra paint, extra hardwood [laughing]—everything you could think of, stick it in there for the difference between \$21,400 and

\$24,800. What a commentary on what costs have become) It ties in with the little skit I gave you about Bill Ward, estimating a stone job he had done at the Nevada State Prison in about this time. And he had gotten \$1,700 for it, and his estimate, as of 1930 or '40, whenever it was, was \$60,000" [laughing]. That stonework, which went up a lot faster than other things, by the way—. A little sidelight on that is that many years later, I, as an architect in my own right, remodeled the governor's mansion—that is, repaired it and put it in shape during Mr. Balzar's administration.

I don't remember—oh, another job that Dad did was the Rialto Theater, which is now the Granada Theater. Now, that theater has since burned down, and I, as an architect in my own right, alone, repaired it and put it back in shape [laughing], the second job of that sort.

Well, I came back to Reno. Father was designing an isolation hospital for Washoe County Hospital. He became sick, and he asked me if I would finish it. Now, in 1910, Father had been doing the Reno High School and four or five other schools here, and other jobs, like the Rialto Theater, which is now the Granada. And I had worked in his office with him, so I knew how to draw and that sort of thing. Also, I had done some rather meticulous drawing at McGill... So I finished the isolation hospital for him and wrote the specifications.

And then, he got another job or so, and he was still sick, and asked me if I'd do those. So I did those, and the next thing you know, we had formed a partnership, George A. Ferris and Son. And we did—I've forgotten just what we did. I know that in 1928, we did the first big high school in Las Vegas. It was a high school and a gymnasium and a shop building. And it was quite a job. It was \$225,000, something like that. It was a big job for those days.

Well, during that partnership, one building that sticks out in my mind is the Cladianos building on the corner of Sierra and Second. We had two very fine bricklaying firms in Reno at that time, and brick was the principal building material. So in the Cladianos building, every square foot of that building is covered with face brick which has been cut to pattern. This is a job that would cost more today, for the brickwork, than the entire building cost at that time. But that's the way we built in those days, was with brick.

We did high schools in Austin and Eureka. I don't know whether we did anything in Ely at that time or not. We did later on.

However, we did in Las Vegas a high school. This was so interesting. The first thing that happened on that job was that one of the bidders asked to have his bid thrown out because he had forgotten the brickwork, and it was some eight or nine thousand dollars worth of brickwork. This, in those days, would have been a big loss. Of there was immediately a bag hassle about whether or not they would throw out that bid or make him do it and give him the brickwork for nothing. And I finally prevailed on them to throw the bid out because I didn't think they could make it stick in court.

Anyhow, so we got started. And almost immediately, the building inspector for the city of Las Vegas came up to the job every morning and took a look at the forms they were building for the foundations and charged the contractor three dollars. Every morning the plumbing inspector came up and took a look at the faucet on the cement mixer and charged the contractor one dollar. And when I protested to him, he said, "Look. If you don't want it this way, then you can put a vent pipe off of every shower in the building." Now, those showers were located directly below the assembly hall. And if we had to take a

vent pipe off of each shower trap and run it straight up to the outdoors, which we would have to do, we'd have [laughing] an assembly hail loaded with vent pipes, about twenty of them, sticking right up through the floor and through the ceiling.

Well, something had to be done about that, but about that time, we'd been protesting a little bit. The Las Vegas people got a little tired of this protesting, so they arrested the contractor. Pyeberg and Sorenson [firm name] of Salt Lake city were the contractors. And their contract called for them to use all Las Vegas labor, but they could bring in their key men. Well, they brought in their key men, and I don't know whether they brought in [laughing] any more or not. But immediately, they were arrested. Mr. Sorenson, who was [on the job], was arrested, and they fined him six hundred and odd dollars. And he was going to appeal this, and so forth, and sent a wire to me to come to Las Vegas.

So I went down to Las Vegas. I went in to see the mayor about this fine and about these building inspectors and plumbing inspectors, tried to get the job lined up so that it would go along in some sort of an orderly manner. I finally got into his office. He said, "What's been keeping you?" or words to that effect. And I told him that I'd just gotten a wire, and I'd come as quickly as I could, and we passed the time of day. And he said, "Well, what do you want to do?"

[Laughing] "Well," I said, "I want to get these inspectors of yours off our back. And I want to get this matter of the fine settled one way or the other. On a \$200,000 job, it's not a big item, but it is certainly creating a lot of havoc."

So he said, "Well, I'll tell you what you do, You have that guy go and pay the fine and he won't see the inspectors any more." So that's what we did.

On that job, the electrical contractor was the local jeweler. He had simply had a contractor from Los Angeles bid the job. He had put his profit on top of it and submitted it to the contractor.

Another thing that happened was in connection with the flooring. I had to specify quarter-inch battleship linoleum throughout the school. And quarter-inch battleship linoleum was a fine, long-wearing, solid product used by the Navy, for instance, in most of their ships. But about the time it became necessary to start work on the floor, I got a letter from Las Vegas saying that they wanted to change from battleship linoleum. (I'll think of that tile, sure. It's a little tile, about so-by-so, one inch by two inches, just gobs of them.) It was a brand new product about which I knew nothing. And I refused. And finally, I got a wire to "get down here to [laughing] Las Vegas."

So I went down, and I went in to see one of the school board members about it and found that the lobby of his establishment was completely covered with this new floor. So I went Over to see another one of these members who had a rather large clothing store and found that the floor of his clothing store was completely covered with this new floor, too. So I saw the handwriting on the wall and gave up.

Another job that had—now, let's see. We did several jobs in Wells, Nevada, a grammar school and a dormitory, and something else. Earl Wooster was the principal of the school at the time. In connection with this grammar school, the school board had stated that they were going to see to it that a local firm did the job. The local firm that bid it was [Rockwell and Sutton]. Anyhow, they had a fairly low bid, a bid that was obviously too low. And the next bidder, from Idaho, Twin Falls, Idaho—Earl White Company, Twin Falls, Idaho—had

a logical bid. And I recommended that they take White's bid. And they said no, they would take [laughing] the local contractor's bid. "Well," I said, "he can't do it for the money."

He said, "Oh, he'll get by."

Well, after the job got going a little ways, I got a request for a change from common brick to face brick in this building, which amounted to, we'll say, \$5,000 difference in cost. And I wanted to know who was going to pay for it, and they said, "Never mind who's goin' to pay for it. I want those bricks used."

I said, "I'll issue a change order for the—without cost."

He said, "No. You issue a change order for \$5,000."

That's the way these things go. If you put in something that's more expensive than original, the architect issues the change order and the owner pays it if he accepts that change order.

The next thing I got was a request to change from wood lath to metal lath for an addition to the contract of \$5,000, some more protests which I lost out on. Another little request came for \$450 for a connection to the city water, which connection had already been made, tested, and buried, and was a part of the contract.

So I finally got a request for fifty dollars in order that they might bring the Masons from Elko up to dedicate this building. And a man named Clock, who was my supervisor on the job, was also asked for fifty dollars, which he gave them, and I suppose that the contractor also put up some money. Well, it turned out that this wasn't enough money. So I got a request for a sidewalk around the building, and they drew a line out. It went straight out and through the sagebrush [toward] Round Mountain for a hundred yards. I've forgotten what that was; it was below a thousand dollars. Anyhow, they wanted an extra for

this sidewalk. And by that time, why, I'd quit arguing with them. I gave them the extra order, and they used that money to finance a real good party when they dedicated it. But then, they thought that was just fine.

Shortly after that, the district attorney of Elko County started investigating the setup, and they found that the contract for the blackboards and all of the paper and chalk, erasers—the whole works, seats—had been let to a local service station dealer. And I got an order to come to Elko to talk to the district attorney. And I asked him why. He said, "You bought a new Chevrolet while this job was going on,"

I said, "Well, I did not."

And he was going to indict me along with the school board. The school board, finally, most of them resigned, and about that time, the district attorney died, and the new district attorney dropped the whole thing. But that was more or less the way building was done.

In Virginia City, I had a job putting a roof on the courthouse and various other remodeling work with the courthouse—interior plaster was falling off and that sort of thing. And I got a request for a payment for the roof before the roof work had been started. The roof was about a \$5,000 roof, and they wanted something like \$4,000. And I refused. The result was that out of the funds, they paid the \$4,000 to Dick Seltzer, who was the roof contractor. And he in turn paid some unknown sum to a man in Virginia City who ran a sheet metal shop and who was very prominent politically. And he had told the county commissioners that if they would pay him what profit he would have made if Specified a sheet metal roof instead of an asbestos shingle roof, that he would let them go ahead with the work. And that if they didn't, why, he was going to use his influence to stop the job.

So they were paid.

I was going to tell you one about Ely. I don't think I'll tell you [laughing]—tell you about that one. But this was the sort of thing that was just kosher in those days. You expected that you were going to get a cut here and there. It was up to the architect to keep out of jail, I guess,

Well, now, I said we did schools in Austin. In Austin, they didn't get enough money from the legislature to build their high school, so they very conveniently transferred some funds from the road fund and other places until they had enough, and built it, much to the—well, it upset the people in Battle Mountain rather terribly, because they had wanted the school in the first place. And when it went to Austin, why, they raised quite a lot of fuss.

But this was more or less the way they did it. In those days, when I got a job, or Father and I got a job, for that matter, “e went to see the people. We talked over what they wanted and what we could do about it, and what we would charge them, and they said, “All right, you have a job. Get started right away. When will you have the plans?” And we'd try to tell them something about the plans. We shook hands. Now, this is business that's done with governmental agencies, with district attorneys available. But we shook hands and that's all there was to it.

And it was when the gamblers began to get into Las Vegas and the little sharp legal practices began to come up—if you didn't have yourself well protected, maybe you wouldn't get paid for something—that we began to write contracts. And they came into Reno, too.

In those days, I, as an architect, was also a structural engineer, and I studied heating and ventilating on my own time, of course. I had had electrical engineering in college, so that I was able to design the heating, the ventilating,

the electrical work, structural engineering work, and the building all by myself, without hiring anybody, arty consultants, something which today would be utterly impossible. There is no architect living, I don't think, who could do those with the complicated materials and methods that we have today.

Another thing in those days, I didn't have to worry about unions. We didn't have trouble with unions. As happened later frequently, there were jurisdictional disputes arose in the design of the building. I didn't have to worry about whether a material was going to be put on by a laborer or a carpenter or a plasterer or painter, or what was going to happen, because we didn't have those union troubles. What we did for the design of a school was very simple. We got the principal of the school—and they didn't have superintendents of construction in those days. We got the principal of the school, and we found out how many people were going to be in how many classes of what kinds. And then we would lay out a tentative plan, and we would set those people for each class of the day where they were going to be. And when they approved this setup, this was the plan that we adopted. Wow, some of them had gymnasiums with their schools, and some of them (for instance, Austin) had no gymnasium at all; they had a small study hall. Study hall was always necessary in those days. They always had a Study hall for people to come in and sit down and study before they went to their rooms for instruction. In Eureka, this was quite a bit larger building than we had in Austin, and there were troubles there.

The man in Austin who had the newspaper was quite well known throughout the state. Jock Taylor. He had a newspaper, and he was very vocal about not building this school.

And in Eureka—hmm. About all I can remember of Eureka is where the school sets up on the hillside. This school was built of

brick. I've forgotten where the brick came from. We built them of brick because we could get them there fairly cheaply. One of the reasons that brick went out of style was the freight costs of bringing them in. I don't remember much about the Eureka school. But it was—the same procedure would be set up— well, how many children are there and what subjects are they going to be taking, and where will they be during each period? And this was not very complicated then because they weren't very fussy—he would be here, and if he wasn't here, he'd be someplace else. What the heck? So that's more or less the way we did those schools.

Now, in Las Vegas, we did a complete concrete school, and a lady, I believe, was the principal. But nobody seemed to be very much interested in the design 'till they came to the gymnasium and the number of people they had to have in the gymnasium. And I remember, there was quite a fuss about the spectators' seats. And when you start putting the spectators' seats in, you start increasing areas. And when you do that, the money begins to pile up. And, of course, we only had so much money to deal with.

That was another thing that I could do in those days, which no architect can really do nowadays. I could also estimate the cost of a building. Because most of the contractors, in bidding a job, they took off roughly how many thousand brick there were. And if it wasn't a pattern brick, why, it was so much a thousand. If it was pattern brick, they didn't worry about how complicated the pattern was. That was another price. And to illustrate that, William Ward, who was one of the Ward Brothers contracting firm, in cleaning out his files one day, came across a card of a job he had done at the state prison in 1905. And the cost of that job was \$1,700. He decided he would figure up what the cost of that job would be at that

time, and it would have cost \$60,000, roughly, to do the job, which was, take that rock, cut it up. They don't have anybody who knows how to cut up rock any more. And bricklaying has become a small part of building, actually, today. And brick masons are, particularly in places like Reno, small towns, are very scarce, and I shouldn't say they're not too good, but they're not.

Oh, I had a thing I know you'd be interested in. Oh. I put acoustic treatment in the State Building. Better tell you about the State Building first. They were going to have a state building across from the Post Office. We had applied for the job, and Fred deLongchamps had applied for the job, and they finally said, "Well, we'll let you two architects do it together."

So Fred came over to see me, and my office at that time was in Decker's building, where Armanko's store is now. He came over to see me. And he said, "Why don't we work it out that you do the heating and ventilating and the structural work, and I'll do all the rest of the work?" So this is the way we worked that job. And I remember that the first sketch that Fred gave me of this auditorium, there was a big balcony, and [laughing] when I laid out the seats on the slope that he had shown on a flat plan, the guy in the top seat was sitting right on top of the parapet wall in the [laughing] front of the building, which, in a tentative plan, that could happen.

But we built that building (Joe Dillard was the contractor). And we had a lot of criticism because we used brick bearing walls and a steel interior. The trusses were steel. The balcony was all steel constructed. The partitions were all wood studs with metal lath and plaster, which at that time was considered to be almost fireproof.

This also had a little byplay of a firm in Sacramento, who were lower than Joe Dillard

in the bidding. This was another brick loss. They came to the board and said, "tie left out several thousand dollars worth of bricks, something like fourteen, fifteen thousand dollars worth of brick out of our bid. And naturally, we can't go ahead with the job. We don't want to lose that."

And this red-headed district attorney, Mrs. Blaney worked for him for years. Anyhow, he said, "Well, you have a \$12,000 certified check coming. So we'll keep the check and award the job to J. C. Dillard."

And, of course, this Campbell firm, the firm from Sacramento, Campbell said, "uh, no. This was an honest mistake. I'll prove it." And he did. He brought his bid sheets in, and his bid sheet showed that there was labor and materials, and the two combined went out into a final third column, and he didn't put this in the third column. So it was quite obvious that he had made an honest mistake, and it was also pretty obvious that if they went to court, they wouldn't take that \$12,000 away from him because nobody was hurt. You're still paying what you should for the building. But in any case, we got that building built.

I started to tell about the acoustic treatment. Some years later, the auditorium was acoustically very bad, and the county board of commissioners wanted to improve it, and they asked me to put some acoustic treatment in. So I got hold of an acoustical firm in San Francisco whom I knew quite well, and we got together and worked out the acoustical treatment and the price for it, which was accepted. The Western Asbestos Company was the firm. They came up here with their men to put on the acoustical treatment. Well, the minute they started work, [Roland] Flyge of the Plasterers [Union] came to me, and he said, "This is our work. This is Plasterers' work. And we want it. we

don't want those fellows doing this work in our town."

"Why," I said, "it's not Plasterers' work at all!" And we had quite a hassle, and I won out. Flyge dropped it.

But the next day, the boss of the Painters Union came in. And he said, "This is Painters' work. It's the same as putting wallpaper on a plaster ceiling. And we want it."

And I said, "Well, you're not going to get it." But I didn't have the last word. (The] county board of commissioners decided that they'd better get into the act. So I told the county board of commissioners that we couldn't let the painters do this job because they didn't know how. And they arrived at this deal with the Painters Union: that the Painters Union would put one man on a job for every man that worked on the application of the acoustical treatment to the ceiling. And in that case, they would allow the Western Asbestos Company's men to do the job. And that's the way it was done. The Painters came there, and the Western Asbestos Company boss said, "Well, you're here. Come on, put some of this stuff on." And putting it on the ceiling was a question of working over your head with a heavy roller and a very heavy, thick blanket of material. And the painters didn't last more than about an hour. They were all washed up. They'd had it! So they stood around there, and the Western Asbestos Company's people completed the treatment of the ceilings [laughing]. Those are the sort of things that happened in those days. They still happen, as a matter of fact.

I've roamed so much, I've lost sequence. Jobs that we did together here. Of course, we remodeled some of the schools together that Dad had done originally.

The application of the stucco on the schools that Dad designed was on metal lath. This was also metal lath without the copper

ingredient in it. It was just iron metal lath, and it could rust out if it wasn't completely buried in cement. The stucco that was put on was approximately an inch and a half thick. And it had a mottled surface, very rough surface, done on purpose. It was put on with wooden paddles. And in order to put it on and shove it through the metal lath so that it formed a protection in the back, they had to press it very hard. And to get the inch and a half thickness, of course, they were working over and over areas, with the result that they put on stucco which had been worked to the point where it was completely mixed. The ingredients were completely mixed together, and it was tightly jammed into the metal lath. And that stucco, which was put on in about 1910, is perfectly good today, and without cracks. And the lath is perfectly good today. It has been surrounded with stucco and has not rusted. This, we could not do today. The plasterers in those days—. Another thing that we did with plastering was to screed it; that is to say, we would nail little pieces of wood, say, six feet apart. And we made sure that they were exactly plumb and exactly the same face, one to the other. And then they would take a straight edge and follow up and down those to put the plaster on, which made it perfect.

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## DEPRESSION YEARS: BOULDER DAM, NEVADA STATE HIGHWAY DEPARTMENT

Let's see. My father and I broke up our partnership at the time of the Depression, 1932. And Father became the state architect for the Federal Housing Administration. I didn't have too much saved up to carry me over a bit of trouble, but for two years, I kept our office (which was in the Cladianos building) open. I was about out of savings, and about that time the banks failed. And we didn't have much of anything. So I started looking around for some way to make some money. Ted Grosbeck of Grosbeck and O'Brien (it was a funeral parlor at the time) and a friend of his were going up to Virginia City and mucking out some of the old mines to see if there was any valuable ore left, or if the tailings could be worked for a profit. And they offered me the opportunity to go up and dig with them. And so that's the first job I had after the banks failed.

Well, the next thing that happened was that Holly Malone, who at that time was [the state engineer] said, "Well, why don't you let me set you up down at Boulder Dam?"

And I said, "Fine.

At that time—that was before I was registered as a structural engineer. So he wired me that there was a job waiting for me, to get down there right away. So I went down. And the job was as a carpenter's helper. And I had to carry water-soaked timbers away from the forms and pile them on my shoulder. One of those four-by-sixes, twenty feet long, was very heavy. Well, after two or three days there, I got working in between a couple of sets of forms, and the temperature got up to around—I think it was a hundred and thirty-seven, they said. And I passed out. Some friends got me onto a truck that was coming back to the dormitory—had a whale of a big dormitory. And they advised me not to say a word about passing out, because they said, "If you do, the doctor will simply testify that you had heart trouble, and they'll fire you. They don't want to mess around with it at all, don't want to see what was the matter— nothing." The result was that I stayed there for two days, and then I was put on bending the big steel reinforcing bars in the steel yard at night. I got by there

fine. I began to harden up. And then I took that job on in the daytime.

But by that time, I could see that I wasn't making enough money after the dormitory, or whatever they called it, got through with their deductions from my salary. So I came back to Reno. And I went down to see [E. C. Peterson], He was controller, I think. And he said that he would get me a job at the highway department, which he did. And I became a concrete inspector. My first job was out thirty miles north of Austin, at a place called Peterson's ranch. And the next job, I was brought into the highway from Fernley to Reno. The next job, I was put on the 395 through Reno, at which time I displaced the then inspector. And he immediately quit. Who do you think he was [laughing]? It was Fred—oh, the guy that came in here and took over the presidency of the power company—Fletcher. It was Fred Fletcher.

There were a lot of characters down there— [Edward C.] Peterson, who was controller for a long time, he's the man who got me my job with the highway department and saw to it that I didn't get fired when [Al] Williams wanted to fire me.

You know, when I was working for the highway department, they built head walls on slopes. The road would slope out like this [gesture], and they'd have a big conduit going through underneath the road, and then they'd put Un] a concrete head wall to hold back the dirt, and so forth. And these head walls were standard things. They had a whole gob of dimensions for a head wall, with one-to-one slopes, and one and a half-to-one slopes, and one-to-two slopes, and various size conduits from two feet up to six feet. Eight feet, they used to put in a concrete underpass.

I worked out a formula for these head walls in order to get the cubic contents. This is the way they paid for them, is by the yards

of concrete that went in. And they wanted the cubic contents worked out to a fraction of a foot, like a tenth of a foot, or something like that [laughing]. This is getting pretty small. And they pay the contractor. If there were twenty-two and six tenths feet, they'd pay him for twenty-two and six tenths feet. But that way, it's so much per foot. That's the way they bid the job. So I worked out a formula whereby I didn't have to take all these measurements, and so forth. I only had to have height and width—or, I've forgotten just exactly what it was that went into the formula. And all the rest of the things were all related to these two dimensions, so that with the formula, all you did was work the formula for about thirty seconds with a slide rule, and you had the cubic contents of any one of those things. Well, Williams, who was the boss of the Peterson Flat, Peterson ranches out by Austin (we did about thirteen miles out there), he didn't believe in this formula, and he didn't believe that I had the right cubic contents anyhow. As a matter of fact, he was very jealous of me because Art Loforth, who was in charge of field work—Art Loforth came out and wanted to know what the trouble was, and then he ate Mr. Williams up real good and told him to forget about firing me. And then, I remember, on Thanksgiving, he brought me in for four days to be with my family; and Christmas, he brought me in for a week to be with my family. And this just burned Williams to the tee. But getting back to these head walls, we finally got a big one, a head wall with—instead of a metal pipe, it was a concrete box that went across underneath the roadway. And, of course, the concrete box, it's very simple to figure the contents of it. And the head wall on the concrete box is the same as it would have been on a pipe. So the formula worked. And I don't know—there were a

couple of hundred yards of concrete, and this was a big thing. And I just worked the formula for the two head walls and took the length of the box through, and that was the contents. Took me about five minutes.

[Laughing] Well, Williams just simply hit the ceiling! He couldn't understand the formula, to begin with. He wasn't a technical man. And so he made a drawing to a large scale, and then he measured each part of it and said, "This is eight inches wide and it's six feet long at the bottom, and comes to a triangle at the top, so that has so many feet. And then this part of the head wall here is so by so, and that has so many feet." And he worked it all out very carefully from this large scale drawing, one inch to the foot. Gee, it took the whole top of his desk!

When he got through, he didn't quite agree with my figures by some fraction, say, one or two percent; it was close. And he just wrote in to the head department in Carson and raised peculiar hell about this guy that was so careless in his figures and getting the contractors with the wrong money, and the contractors would be mad at the department, and it was going to be a terrific thing!

So [laughing] Art Loforth had them figure the contents in the head office, and it came out what I had had to come out with, because the formula was correct. They checked what I had, and [laughing] Art Loforth, he just [laughing] raised hell with Williams again a second time. That man hated me. He hated me with—he would smile at dinner time [laughing], you know. We had to be together and eat together. But any time he talked about me, oh, brother, did he give it to me!

And this reminds me of another thing along the same thing, years later. I did some work out at the brickyard for Al Caton. It was at a time when he was changing his operation to sell oil, also, because the brick business was

gradually falling off and the profit was going out of it. And he had a tank that was, oh, we'll say ten feet in diameter and thirty feet long, or something—a big tank, and he wanted to be able to drop a stick down in the tank and read right on the stick how many gallons were in the tank. So he had to have a stick which was graduated, we'll say, for each two inches of oil, as you came around the circle. Down here at the bottom with two inches of oil, [there was] very little oil, and it got bigger and bigger 'till it got to the middle, and then it went back the other way. So all you had to do was to calculate it from the bottom to the middle. And I had a formula for that. I used the formula and calculated it all out for Al and gave it to him.

And he wasn't satisfied [laughing]. And he made a scale drawing of the pipe, big circle. And then every inch throughout, he drew a line vertically, and every inch, he drew a line horizontally. And then, at each two inches, he could take that two inches and he'd count the number of square inches when he could see them, and count them. And then he figured how much oil there was, and then he went to the next line, and he counted the inches at—[laughing]. Oh, he had a mess)

I don't know why I thought of two little bits of things like that. They're no good for your—. But they do give you this idea, that a great many men who were doing business which today is considered a little technical did not have technical training, but in practical ways, they got by just as well. They sold their goods for the proper price and got the proper quantities. One way or another, they got there. Today, things are streamlined. In those days, they had plenty of time, and they sat down and they thought about it. And they figured out how they were going to tell—. Sometimes, they'd weigh an entire carload of stuff on their big scales that they'd have for trucks. And

then they would leave the stuff on the truck and weigh it as they sold stuff off, instead of weighing the stuff, since it was going to be taken from the truck onto somebody else's truck, because they didn't want to handle it twice. So they'd take it off of this truck or wagon bed, or whatever it might be, and haul it away. How much am I going to charge? How many pounds was it? How many bags was it? How many this? How many that? Well, they'd just weigh the damn truck again. They lost so much stuff, so that's what they charged him for it.

One of the early arguments about stonework, a perch of stone—there are two different kinds of perches. One has seventeen feet—well, I shouldn't tell you, now because I don't remember. But one had so many cubic feet or cubic inches in it, and the other had quite a lot more. And when the stonemason charged you by the perch, why, we always charged you using the perch that had the smallest number of cubic feet so he got the most perches. And if you were thinking in terms of the big perch for your costs, you were surprised at the bill you got [laughing].

The Nevada Highway Department—well, this was a sequence of jobs. [When] I started in as a concrete inspector on a project out by Austin, at Peterson's Flat, [I] almost immediately got into a very serious hassle with Frank Frandsen of the Nevada Rock and Sand Company about the mixing and pouring of concrete. And I was upheld by the Carson City office. So when that job was over, I was transferred to the work on the highway between here [Reno] and Fernley. And there, because we were using gravel aggregates, we were getting concrete strengths that they very seldom got. We were getting concrete that would run up to 5,000 pounds a square inch. And this is, oh, half again as strong as the concrete they normally get in a

normal, competitively bid job. The contractor, naturally, isn't doing any more in the way of cement and mixing and that sort of thing than he has to.

So I was transferred from there to the city job, where Virginia Street, [Highway] 395, was put in through Reno. This was where Charlie Hill was the resident engineer. And very shortly after I got in here, I was transferred to the Highway Department in Carson City in the bridge department, designing bridges. Well, the design of bridges—I was not an experienced bridge designer. I was a man who was given a part of the work to do, and gradually, over a period of a few months, I became able to take over the design of some particular project.

But about that time they wanted to remodel one of the buildings, the Carson City buildings where the Highway Department had offices. They brought me in, as a former architect, to do the drawing and to become the architect for the Highway Department—not officially. That was not a job they created for me, but that's the work I was doing. And I got up on my high horses and demanded that I get paid for it, that I wasn't going to do that kind of work for them. So I finally got a salary which was greater than that of their office engineer, and his name [is] George Egan. And he didn't like that. So there was a little discomfort in my work down there, and then pretty soon [Robert A.] Allen became highway engineer as a Democrat, and his statement was that, "To the victor belongs the spoils." And the first thing I knew, they said I had to move to Carson if I wanted to work for the Highway Department, knowing I wouldn't move to Carson. I refused to move to Carson. The ultimate outcome of it was I got fired.

But in the meantime, Charlie Hill had been asked to become city engineer by the

then mayor, August Frohlich. He wanted me for his building inspector, and I was appointed as his building inspector. And shortly after that, I began to do a little work at night, a little architectural work. And then gradually, over a period of 1935 to 1945, I got back into so much architecture that I was working late nights, and I got a thyroid deficiency and I had to quit the city. So I took a two years' leave of absence, and in 1947, I gave up entirely.



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## BUILDING INSPECTION, UNIFORM BUILDING CODE, ZONING AND PLANNING

During my term as a building inspector, I became a member of the city planning commission. In the early days of my job as building inspector, I had advocated the formation of a planning commission and the adoption of a zoning ordinance, and these had been turned down; the city wasn't ready for it, and we didn't need to zone anything in a city the size of Reno, and various other reactions of that type. And I had advocated the adoption of a better building code than we had. The building code we had at that time had been written by representatives of the National Lumber Manufacturers Association, and it was slanted toward lumber buildings. And to some extent, it penalized buildings of reinforced concrete, steel, and that sort of thing. I was successful in getting the Uniform Code at that time adopted. This was about '37 or '38.

The Uniform Code had been started in 1925 by a group of building inspectors in the Los Angeles area. The representatives of industry had been very much interested in getting some sort of a building code which

treated all of the various principal elements of building equally because the building market was a tremendous market, and the competition between the various types of materials was very keen and heavy at the time. And they would like to see regulations that were more sensible.

The Uniform Building Code was originally a group of the standards of the various elements of industry, such as concrete and steel and wood and masonry (they call it clay products), and gypsum, and so on, (that] a great many national organizations of industry more or less pooled together. They put up their money for memberships, which was where the money really came from, because many of the cities wouldn't pay a nickel for a membership in this organization at that time.

So we got this code adopted. At the same time, we had an obsolete plumbing code. I had asked that I be given permission to write a new plumbing code for the city of Reno, and it had been denied. But the plumbers union heard of it, and they lit in my office en masse and said that they wanted this done and that they

wanted to participate. So we also held, then, a series of meetings with the representatives of the plumbers union, and gradually, we worked out a plumbing code. And then we compared that plumbing code with a western plumbing code, which was being developed in southern California, and used some of the parts of the western plumbing code, and got a very acceptable code which later on has been changed, and they have adopted the national plumbing codes that have been developed.

The inception of this plumbing code is interesting in that when I became building inspector, two local plumbers asked to be examined for a license as master plumber. One was Charlie Burke (I don't know whether you want to use those names or not), and the other was—I think it's Record's partner; I'll think of his name later. These two boys wanted to be examined for a master plumber's license. And so a time was set for their examination.

At that time, the president of an organization called the Master Plumbers Association of Reno came into my office and said, Now, we'll examine these boys first."

And this was news to me, that the Master Plumbers organization was going [laughing] to examine anybody for a city license, and I said, "Well, if you want to examine them, it's all right with me. I'll tell you what you do. You take one of them downstairs and examine him, and I'll start giving the other the city examination up here.

"Oh, we wouldn't do that." If they didn't pass his examination, they would not be permitted to take the city examination. Well, of course, this stopped things cold right there. There were some rather hot words exchanged before we got through, and this gentleman went back to his organization and resigned.

It developed that what they did for an examination, they took the applicants down to the basement of the city hall, which was

rather dark, and they had them wipe a series of joints—now, wipe joints at a time when lead pipe was used extensively. They'd cut angles on a lead pipe, put them together, and then you had to take hot solder and make a tight joint of it, and also a strong joint. Very hard for you to pass that examination with Master Plumbers. If they didn't want you to have a license, you didn't pass. They just said your joints were not acceptable and tossed them into the discard. So the upshot of it was that I just took these two boys in and gave them their examination and gave them their license. This created a terrific uproar in the plumbing industry, particularly among the master plumbers.

I got a copy of the examination the master plumbers had passed. And it was not an examination at all. It was just a series of about ten yes and no questions, which was simply a make-believe examination, [didn't] have anything to do with a real examination. And they got all to be master plumbers, the few that were doing work together at the time. And then they decided they'd keep other people out from being master plumbers. So that, also, helped to stem this desire for a plumbing code.

We did get the plumbing code written, and it has developed into an excellent code now. We did get the Uniform Building Code established, which is, as of today, one of the four major building codes in the United States. And it is a code that is not industry-dominated any more, although industry is very important in these codes because their developed standards are used back into our code year by year.

As new materials and new ideas and new methods come up, they're included in the code in what is called a code changes meeting once a year. During the year, there are seven committees, one concerned with wood, and

one with steel, and one with concrete, and that sort of thing. And hearings are held monthly at which members of the industry appear to ask for inclusion in the code of new ideas, and so forth. These meetings come up with a recommendation that this idea be adopted or that it not be adopted. And this goes to the annual meeting in which all of the cities supposedly send representatives, send their building inspector or representatives of their building departments. I think that, as of right now, this code is in use in some twelve hundred-odd cities and has a great deal to do with the market of about 40,000,000 people in building. So it is a factor. The other codes that have come to the fore are the BOCA, the Building Officials' Conference of America, and the Southern Building Code, and then there's a sort of a splinter branch called the New England Building Code. But in general, the provisions of any building code—here or in Europe or in Japan—are a collection of the same standards, the same engineering standards with respect to building. Of course, Health and Welfare have different aspects in different locations of the country. Politics do invade the building code from time to time. And the existence or the general use of a certain type of building material which is plentiful in an area also affects the attitude of those who write codes.

But in general, the Uniform Building Code is a fine example. It has been used as the basis by Toronto in the adoption of a national building code for Canada, just as reference work, is what it was used for. At one time, the State Department wanted to translate it into Spanish so that it might be used as a reference work for the South American countries. Tokyo adopted the Uniform Building Code, and then, of course, have built it into their own code. But the bones of the code started with this Uniform Building Code.

The first annual meeting of the code which I attended, the city, I think, gave me twenty-five dollars for expenses. And this meeting was in San Francisco. I was much younger than I am now and full of beans and ideas which were, generally speaking, not too (laughing) hot at the time. So I was rather vocal at the first meeting I attended. And there came to be an attitude, "Well, if he's so smart, let's let him go to work and see what he can do."

So I became a member of the board of directors at that first meeting. And I immediately found that there was fermenting an idea that it would be good to get rid of the people in Los Angeles who were the managing directors for the code and put in some people who in this particular effort were more cordial toward construction. And this campaign (which went on for about three or four years, I guess) originated in Portland, Oregon with, I guess, the plywood industry and the Douglas fir industry, and so forth. In trying to stop this interference, which would certainly slow down the development of the code, why, I became very much interested in code work. And over the years (that's 1935), in 1939, I became president. And I was president for two years. And after that, I was still on the board for another four or five years. By that time, we had passed through many of the incidents of travail [laughing] of people trying to take charge of the code. I remember one incident [that] happened in Reno—a couple of incidents that happened in Reno. I had two conventions in Reno. And at the first convention, which was early, maybe just my second or third year, everybody—once they got a man from Reno in the organization, they thought Reno'd be a swell place to have a convention. The first year, we had it at the Golden [Hotel], and I found people were hard to find. And checking into it, I found out that

there were numerous cocktail parties being given by members of industry. The lumber people had open house. You were perfectly welcome, but there were also key people they thought they could influence who certainly had a ball up there for three or four days. And that went for the steel people, the concrete people, and what have you. So I decided to break that up. We called it political drinking. And I made all of the arrangements for the entertainment, so that at a certain time, taxis came up to the Golden Hotel to take people to the Tavern out here, wherever it was we were having an affair. And I broke those parties up. I went right up and said, "Taxis are waiting. Come on, let's get your clothes on and go." And from then on, I pretty well killed the [industry parties].

Well, this was another incident of the sort of thing they did. They called up three or four key people who they thought were influential among the building inspectors who attended the meetings and would probably be able to influence voting for their particular measure that they were backing for that year, or measures. They called up these few building inspectors, said, "Look. Three or four of us are going down to Ensenada for a week before the convention, and we've having cottages. Of course, we can't use all those bedrooms. There's just too much," and said, "There's going to be a birthday party for so-and-so, and what have you, so why don't you bring your wife, come along with us. There's plenty of room in our cars, too."

So here go a big group of people down to Ensenada for three, four, five days, and when they come back, they certainly have been sold a bill of goods. Well, this was going to make it pretty difficult to act on some of these matters with anything like good sense. So we tried to think of what to do.

Well, another thing that happened about that time was that we read in the newspapers that representatives of the lumber industry were in Phoenix and that they were drawing a new building code in Phoenix, and we knew it was going to be slanted toward lumber to the exclusion of all other building materials [laughing], if it was possible.

So we decided that we would subscribe to a clipping service (cost us \$600 a year at that time, and that was a Lot of money), in which we would find out where these men who were well known, the men of industry, who went to conventions (they went to BOCA's convention, Southern Building convention, and so forth, just the same as they did to ours), find out where they were going and what they were doing so that we could be better prepared at our annual meeting to deal with them. And this worked out very well. We knew pretty well what they were promoting and who they had on the string, and we could work on those people, too. It was very helpful.

This was the time of World War II. And there were controls [which] went into effect on building materials, and this was duck soup for industry. For instance, the wood people came and said, "Now, we want to raise the working stresses on our material to conserve wood because a great deal of temporary construction is being done. And it doesn't have to be as strong and sturdy as construction which is intended for long-term use and the habitation of people."

So those things were adopted temporarily, and they're still in the code. As a matter of fact, they have been increased a little bit since then on the theory that the engineers are becoming more knowledgeable about tying buildings up. You can build of rather thin materials, of relatively weak materials— we'll say not weak materials, but the small size materials— and if

they are properly braced at proper intervals, you can have a relatively strong structure.

And the development of earthquake-resisting construction, which started with the 1906 earthquake in San Francisco, the desire for resistance to a lateral force (which includes wind and tornado) built up rather rapidly. A great many organizations among the engineers were studying ways and means of building buildings that would resist successfully the action of earthquakes and of wind. Whichever of the two would be the stronger. Sometimes wind is stronger than earthquake.

So this led, also, to the districting of the United States according to the frequency and severity of earthquakes. And, of course, California became a type three district because they have quite an earthquake history. This portion of Nevada was also type three. The eastern portion of Nevada is type two, and I think part of Nevada is type one. And I posed the question at one time, "what do you do if you're trying to build a school building which requires adequate lateral force, and it straddles the line [laughing] between type one and type two?" I was very unpopular. It was a silly question anyhow.

We have had in Nevada an earthquake out by Winnemucca, about sixty miles, I think, northeast of Winnemucca, which had as high as a thirty-foot drop [from] one side of the dirt to the other. And part of this rift went through a ranchers' back yard so that his house was on the lower side, and his [laughing] comfort" facilities were on the upper side [laughing].

They had an earthquake in Fallon (I wish I had the dates for these things in mind) which disturbed the ground to the extent that no longer could they irrigate because the slope of the ground had been changed. And then

there were cracks in the ground. Some of those cracks were as much as two feet wide and two feet deep. And actually, no water could cross over them. We had fences that were as much as five feet out of line, power poles that were a great deal out of line. And this is true in Fallon because wherever the ground is soft, loamy, and you have a serious earthquake, it just shakes all over the place. A serious earthquake in hard ground full of boulders and clay, and so forth, does not shake anywhere near as badly. These are two of the serious earthquakes we had in this area, and two of the reasons that this area is considered in type three.

During this war, too, there was a great deal of interest in building codes, and our conventions were held from San Diego clear to Canada, yearly conventions. And, of course, I was in the middle of those conventions because of my interest. I was a worker in those days. I'm not such a worker any more [laughing].

We had one convention, I remember, in Salt Lake City at which time there was quite a fuss with the Federal Housing Administration because they wanted us to change some parts of our code to conform more closely to the federal. As a result of that, when we had a convention in Santa Barbara at the Biltmore Hotel there, the [federal] government sent out one of their top code men, a man named [George] Johnson. The American Standards Association sent out one of their top men to make speeches to our organization about cooperation with the government in the establishment of a national building code.

Well, we weren't for that. We had established a building code which was doing quite well and we didn't want to give it up. So Mr. [Hal] Coiling, who was the secretary-manager of our organization, called me and

he said, "We want you to make the keynote speech at this convention, and if you can, cover as many of the points that are going to be covered by our visitors as possible, and do it first."

"Well," I said, "sure, I'll do it. That's duck soup for me. I'll be happy to do it."

But I didn't get around to doing any work on it, much as the same as I don't get around doing. too much work on [laughing] talking to you. I told Ruth, "I'll make an outline here pretty soon."

So I didn't. And we got down to the hotel, and I thought, "Well, I'll take a couple hours off and make an outline here." But I didn't get a couple of hours off. That was one of the conventions where these Portland people were rather active, and we had a very hot board of directors meeting, finally, and we tossed them out. And this was very interesting and very pleasant, enjoyable activity, and I didn't get any work done.

So on the fourth day of the convention, the speeches were to be made after the breakfast meeting, which was to be about nine or nine-thirty in the morning. I got a few bites of breakfast, and I said to my wife, "Now, I'll run over to the room and make a little outline here."

Well, I got over to the room, and, "Knock, knock" on the door, and here are these two characters. They wanted to talk to me. And they said, "Now, Mr. Ferris, we would like to be sure that we don't have any clashing of ideas if possible. We'd like to give you an idea of what we want to say and hope that you won't contradict too much."

And I said, "Well, I haven't done anything so far. I was just sitting down to think over a talk."

One of them said, "We aren't going to talk. We have spent our time here writing our speeches, and we're going to read them

because we don't want to get crossed up between the American Standards Association' and the Department of Commerce, certainly. And we were hoping that you would also not get crossed up with us." Well, there was some talk, and they left, not feeling too happy about the thing.

By that time, it was time for me to start talking, so I just had to go back to the meeting. And I got up in my slaphappy fashion, and I talked for about twenty minutes. And later, some of the men came around to me and said that this was one of the most interesting talks they ever heard and that it certainly pinpointed the role of the building code and the action of the building code in the industry. And these other two men, they got up and read their speeches, and nothing ever came of it, nationally.

But I got to thinking, "I must've made a whale of a speech." So I said to Mr. Colling, "Will you transcribe that speech and send me a copy of it?"

That I should never have done. Of all the rambling speeches you ever heard! And people were laughing all the way through it, and this was a serious speech! [Laughing] But they thought it was great.

But it did accomplish this, that it stopped this attempt by FHA and the Department of Commerce to write—or, I don't know whether it stopped it, but it was one of the things that stopped their attempt to write a national building code. With the four sections of our country [it would have created difficulties]. The Northern section, and so forth, is wood; the Southern section is concrete; middle section (Colorado, and so forth) is all masonry and concrete block, cinder block; and Southern countries, where again, it's wood largely.

By the way, speaking of the southern section, there was an incident down there in

that the managing director of the American Iron and Steel Institute wrote a building code. And I want to tell you that it was all metal lath and metal studs for gypsum plaster. And at the convention in Fresno, I believe it was, at the end of that convention, he had been writing this code for quite a while, and he brought with him the proofs on long sheets of paper like this [gesture], and about [laughing] about that thick [two inches] I

At the conclusion of the convention, he suggested that my wife and I go with him and his wife to Yosemite for a week. Well, it so happened that we had been intending to do that anyhow. So we went up there for this week, and we found this man trying to pay our railroad fare and trying to pay our bus fare, which we didn't stand for for a minute, and we immediately got the idea that this was a little sales jaunt. So we told this gentleman to forget it, that we weren't interested in being sold a bill of goods. And he wanted me to read, anyhow, the proofs of his code and to give him a criticism on it. And from then on, he played bridge and what have you, and it was very pleasant. We became quite good friends.

Well, in coming back, we drove them back to Reno, and he was going to stay here and play some nickel machines (he loved to play some of the nickel machines). We drove them back to Reno, and on passing a tamale factory out there on Second Street, I said to my wife, "I think that it'd be nice. Let's get a dozen of these tamales. These Eastern people probably have never had them, and they may be interested in them". Well, they weren't. They didn't like them at all. They ate what they had to and wished they hadn't had to eat any of them.

Well, I didn't read this man's bunch of junk he had [laughing], about this thick [gesture], and I finally got a telegram from him, said, "I ate your damn tamales. Why don't you read my code?" [laughing]

Well, I did read his code. And I did tell him that I thought that he'd gone all out for steel, and that if he was going to successfully get the code adopted and into operation that he ought to tone some of it down, which he did. These are the sort of things that kept coming up all the time. And industry is always digging at this code.

It was while I was president, '39, '40, '41, that the lumber people asked the code changes committee to approve a change which said, "All structural lumber must be grade marked." Now, that means that you can say in a code that, "No. 1 Douglas fir is good for 1,200 pounds a square inch, and No. 2 is good for 1,100 [pounds]," and—different strengths of lumber, depending on the amount of knots and shakes and cracks, and so forth, that come into the lumber. And the building inspectors cannot, as a general thing, go out to a load of lumber and determine whether it's top grade lumber and should be used at the designed strengths that the engineers have used in designing the building. They can't go grade lumber. It's a specialty. It just seemed to them that this was real good.

So it went across and was adopted and printed. I sell, shortly thereafter, I was approached by, I guess, members of the FBI who said that they wanted me to sign a permit for the people in Los Angeles to turn over our books to them. And I wanted to know why, and they said they couldn't tell me why, but that they would appreciate [it] if I would do it because it would be simpler that way [laughing].

So I did, and they got the books. And it developed that many of the smaller dealers throughout the United States had been approached and told that in order to get grade-marked lumber without any trouble, right immediately when they needed it, they should join the National Lumber

Manufacturers Association. And, of course, there are dues connected with this. I don't know to what extent those dues actually were, but I heard it was [a] percent[age] of the gross, which would have been a terrific thing.

Well, the result was that the government took the National Lumber Manufacturers Association to court, and they were fined and told that as long as that sentence was in our code, they might not be a member of the Uniform Building Code Association (it's called the International Association of Building Officials, actually).

So since we need the lumber people in our code to fight steel and concrete and all the rest of these people when they come up with something that is their pet and we don't have enough smart people to debate with these men from industry (they're top men), [and] we needed them, we took out the line, and it's never been put back.

About that time also, we began to hold state conventions with the idea of promoting chapters of building officials in areas who could meet periodically, discuss some of their problems, and in case they needed an interpretation of code or in case they had a new clause that would be beneficial in the code, they would communicate with headquarters and we'd get the benefit of those studies, also, besides our committee studies that were going on. And we held these meetings in California, Utah, Colorado, Oregon, Washington, British Columbia, and Saskatchewan. And at those meetings, why, we explained the workings of the code and invited questions and suggested the format for establishing a chapter of building officials from their area. This was very successful. There are chapters all over. Southern Nevada has one, as a matter of fact, and so does northern Nevada. These chapters have been very beneficial in teaching the building officials how to use the provisions of

the code because the code says, "You shall do this," or, "You shall not do it." And you cannot write rules of that kind, that are all-inclusive, that cover every case.

There must be give and take in the operation of a code, and particularly with reference to condemnations. You could get borderline cases in which you could say, "This building should be condemned," and the owner-said, "I can put it in shape so that you can accept it," and somewhere along the line somebody has to come to a reasonable decision which promotes growth in an area instead of stopping it. And the building officials, in the early stages, when they just read this thing and tried to enforce it as it was read, they were hurting construction in some of their cities.

We had several instances in Reno in those early days of condemnations (in which the fire chief had a part, too), and it was a question of whether it was possible, for a reasonable amount of money, to make this structure conform to the code reasonably well. Reno had so many buildings from about Washington Street down to beyond Center, beyond Lake even, that did not conform to the new codes and that did pose a hazard (as they had come to understand hazards), that many of the remodelings of buildings in these areas did not—were not remodeled completely up to the code because this was economically not feasible. But they did improve existing conditions, particularly with the spread of fire, which is what we were interested in.

In these old buildings, they all had party walls, it seems. Every time you built a wall, you also built it so you could sell half of it to the guy next door when he built. And then they would want to combine offices. They didn't have enough space in one building, so they'd cut a hole through the wall and use offices in the next building to add to the offices

in their building for some tenant, with the result that there was a good communication between the various buildings in case of a fire.

Also, they did not use fire stops, as we understand them, in a building. Fire stops mean that the little channels in which hot gases can travel through a building and start a fire someplace else are blocked by running into, we'll say, just a two-inch block of wood that's nailed into place and stops that channel. We do that in between joists over partitions. Between every joist, there is a fire stop to keep the fire from going over the top. And I have seen instances of the transmission of fire.

One of them that was hard to believe at the time was when there was a fire in the B. D. Billingham school. It started in the basement around the furnace room. And it burned in that area and was stopped with a fairly small amount of damage, other than water damage (they did a lot of water damage). But that fire broke out in the roof. And that building had fire stops—all of the fire stops that the code called for. I was the architect for the building, and I wanted to know how come that fire got from the basement to the roof. We had steel columns supporting floor and roof construction, and they're about six inches square. And right in here [gesture], there's a little slot about two or three inches by five inches on each side of this steel column. In those little slots I did not put fire stops. I didn't think of it. Those hot gases went up those very small openings and started a fire in the roof.

And another thing that we started doing—in those days, where we had no ventilation, particularly, other than window ventilation in hotels, it was customary to put a movable sash, called a transom, over the top of the door, so that when you went to your hotel room, you could open a window and you could open that transom, and you could get ventilation back and forth through

your room. In the case of a corner room, you wouldn't have to do that.

Well, there was [a fire at] a big hotel in Chicago. A number of people were killed on the upper floors. And the investigation revealed the fact that they were killed by carbon monoxide gas, that these gases went up vertical shafts that weren't properly insulated from the rest of the building, got into corridors. And they traveled at high speed. Somebody once figured those gases must've been going at around fifty miles an hour from the pressures. This is just the pressures from wood gases. As they build up so much gas, it just shoves it out. And they went through the transoms, these open transoms, and the people were asphyxiated, almost immediately. This stuff acts real fast.

So this is an illustration of building code work. From there on, no transoms over the doors in hotels. But you had to kill a lot of people before you found it out.

In the fire of the Cotton Club in Boston, I went back there on that fire. And the fire marshal told us that there were three men sitting at a bar in the Cotton Club with their elbows on the bar, and that they were still sitting there, dead, when the fire had been put out. They hadn't fallen down, but they had been killed so fast. And I have heard that rigor mortis can, under some situations, occur almost instantly. Anyhow, he said those three men were sitting there just as they were at the time the fire started. And that fire had to do with a lot of painted burlap, too, and stuff. The gases must've been tremendous in volume and very fast.

Well, I started to talk about these conventions. We made quite a thing of them. I remember that in Victoria [B. C.], they had their senator from their town (and senators in Canada at that time were appointed for life—or elected for life; I don't know which),

and this was a very personable gentleman. He came, he greeted us. And this was one of my toughest assignments, is to answer the greetings of the governor and the mayor and the senator, and so forth. They come down and they give you a flowery greeting of some kind that they've been using for about ten years and they know every word of it, and each one of them has a different approach. And then an adequate response has to be made by the people who're in charge of the convention. And by the time I got through with these things, I had several rather adequate responses. I could get up there with a big smile on my pan and kid the life out of them! But at first, I want to tell you that that was not an easy thing for me to do.

They pretty nearly turned the militia out for us in Victoria. They lit up the government buildings at night (and it's rather costly, too, in the way of electricity). They took real good care of us for four or five days there at the Victoria hotel.

One little incident on one of our trips—we were going to the big city to the north of Victoria, Vancouver. The first time we went up there, the city of Vancouver had an old hotel with an English dining room, beautiful woodwork up to the ceiling, waiters dressed in tails, and so forth. The last time we went up, they were in a new building that they had built. Now, this new building, [a] multistory, modern hotel, was to replace their original hotel. But when the war hit, the Canadian railroads who were building the hotel and who had supposedly ten percent of their income set aside for building, they didn't have that income set aside any more, and so the hotel was built, but there were no furnishings in for several years, I think three or four years. The building was there and they never used it. And they had just gotten it furnished, and they were using it on this trip.

Well, you had to have red tickets and one thing and another to get meat in those days. Everything was rationed. And we got up to Canada, and we had been paying anywhere up to fifteen dollars for a dinner for four of us. The Collings and ourselves were on this particular trip. And we got up to the hotel in Victoria. The mayor of the city greeted us and told us that that night, he would host a dinner for us. As I discovered in Canada, they had steaks and anything you wanted. We couldn't get 'em. And I said to my wife, I said, "I'm going to kill 'em at this dinner!"

And we got the menu, and here—here it was, a great, big, long menu. I really went to town! I had steak, everything you could think of. And when I got through, [laughing] my wife said, "Did you see this?"

I said, "What?"

Down at the bottom, it said, "Dinner, \$1.25" [laughing].

Now, the next time that we went up, and we went to Vancouver, and we went into this new hotel I've been telling you about, dinner was five dollars. And that was only a short time later.

At that time, too, you could buy plumbing goods, toilets, lavatories, bathtubs, all that sort of thing, made by the same companies that make them in this country. Well, you couldn't buy them in this country. You could buy them up there.

One of the things that I thought was interesting, I was doing a job during that period for the Nevada Club. And they wanted to put in new restrooms—lots of toilets, lavatories, and that sort of thing, and also, the cast iron soil pipe that went with these installations. It was very difficult to come by. It was barred, as a matter of fact. And they bought this material in Los Angeles. But the people who sold the material would not deliver it. You had to come and get it. So they

bought it; they got it; they took it to a trucking firm across Los Angeles, wherever it was. The trucking firm delivered it up here, and they unloaded it and put it in the basement of the Nevada Club. After that, the owners of the Nevada Club—there were two of them, Sullivan and Fitzgerald—Fitzgerald would come down and he would count the cast iron fittings, and he would count his lavatories and other equipment, and he'd do it every morning. I had quite a few men working down there. And one of them said to me, "what's this so-and-so think, that we're going to steal his stuff?"

And I said, "I don't know."

"Well," he said, "this is going to cost him!"

You know, every time I came down there to make an inspection, there would be three or four carpenters with a set of blueprints laying on the ground. They'd be looking down at them, smoking, talking about fishing and one thing and another [laughing]. A couple of fellows over here'd be stalling. It must have cost him thousands of dollars in labor. They just slowed it down like nobody's business.

These were conditions during the war times. It was hard. For instance, the Bonanza Club, it used to be called the Northern Club. And they decided to make a supper club out of it. He's one of the owners—or perhaps the owner of the Ponderosa now. He and his partners developed the Bonanza Club. And they had everything under the sun that you put into a supper club. Now, where they bought it—! don't know where they bought it. But they had it. And we built it, right smack under the noses of the federal inspectors. Ultimately, I understand that they arrested him, took him down, him and his pals, and took them down to court in Las Vegas, and that he was fined \$1,500, which was just a drop in the bucket, as far as they [were concerned]. That didn't mean anything. And the Bonanza

Club was quite one of the eating places here in town.

Oh, there were so many things in connection with these conventions.

We were going to talk about the Variance Board, for one thing, and the Planning Board. Now, this Planning Board, I told you how I became building inspector, didn't I? And I was appointed to the Planning Board at that time as a representative of the city. At that time, I pushed three things: a zoning ordinance, parking meters, and setting aside land east of the hospital [Washoe Medical] for industry.

The representative of the Southern Pacific, Ray Marks, told me that if we would make land available for industry, he had a notion the city might buy some of this land and sell it back to people that wanted to come; or if the zoning ordinance were adopted, we could zone it for industry (which it is now, by the way). If that happened, the Southern Pacific Railroad would come across the river at Sparks with trackage and go into this area wherever it was economically feasible to do so. Well, I didn't get any place with that at all.

And the matter of the parking meters was simply—it was going to discourage people from ever coming to Reno, and they wouldn't hear of it at all—no parking meters.

The zoning ordinance was coupled with my work with the building code, to get some sort of orderly enforcement for the building code, because I kept running into things that the fire department wanted to condemn. They could never condemn anything. An owner would appear before the council and complain and say he'd fix it up, and they'd ask me, "Is that possible in the building code?"

And I said, "Yes, it's possible, but will he do it?"

Well, they didn't care whether will he do it or not. If it was possible with the building code, it was not going to be condemned. But

with the zoning ordinance, we could very soon zone a lot of those things out of business, and we could sure keep them from going in. But again, I didn't get support for it, and perhaps they were right. It might have been too early in the town's development to go into those things. However, it wasn't too much later after we adopted the Uniform Building Code that they did adopt a zoning ordinance.

And then there became a planning board for Sparks in addition to the one for Reno, and this wasn't working very well, so they had a county planning board, as it is now constituted. I understand Carson has a city planning board. However, Carson is a whole county now [laughing]—maybe two, three counties. I was amazed the other day, driving along the lake [Tahoe], to see a "Carson City Limit" sign up there.

Well, when I left the city in 1945 (I took a leave of absence in 1945), I got off the planning board. The reason that I took that leave of absence in '45, I had been doing architectural work and the building inspection work. My architectural work, I did at night. And I was working until twelve and sometimes one and two o'clock at night out on the back porch of our little place there on Thoma Street. The next thing I knew, I thought my glasses were dirty. I couldn't see through them very well. They were fuzzy. And I'd take them off and clean them, put them on; I'd take them off and clean them, and they were still fuzzy. Well, what developed, had happened, that I had thyroid deficiency development from exhaustion. This (was) about five years that I did this. One of the symptoms of this thyroid deficiency was a lack of coordination, muscular coordination. The doctor told me that this simply meant that at night, when my eyes'd become a little tired, that they stopped coordinating too well. And so I thought that I had stuff on my glasses.

That's when I couldn't write any more. I don't write well. And the reason I don't, it started with that lack of my—I used to write a good hand—muscular coordination. Couldn't hit a golf ball to save ray soul. So I took a leave of absence, and my business increased so much that I never did go back to the work at all.

During that time, and for a number of years afterwards, I was a member of the variance board. And we had at that time a zoning ordinance to guide us, which has been doctored and added to and deducted from to the present, when it's a fairly comprehensive and workable zoning ordinance, an ordinance, by the way, in which they can give or take almost according to whim.

An illustration of that is the fact that when a client of mine wanted to put in a grinding plant for spectacles, eyeglasses, which is quiet, has no fumes, no noise, is a very small operation, and there are no possible objections to it in the area in which we wanted to put it in. But the code in that area says that you may not do manufacturing. So they then interpreted the code to mean that eyeglasses, which were ground, were manufactured. They're processed. So here, I got into a nice big hassle with the board over the definition of manufacturing and processing. Well, a man buys glass, all he has to do is to grind to a prescription. That's processing it. He didn't manufacture anything; he changed it. But that's where they refused him permission to put in his plant. He could go over and sell eyeglasses, and he could adjust them, and all that sort of thing. He could have a store there in this zoning, but he couldn't grind them there. In other instances, such as Eagle Thrifty, for instance, they can find ways and means to interpret things so that progress can go ahead in spite of, perhaps, the objections of some people who may not even be there in two years.

Well, I was with the zoning board—I was chairman of that variance board for a number of years. An amusing incident happened when the art gallery wanted to extend their building to the south with a small addition, and the people next door, who would be probably thirty feet away from the building, as extended, perhaps more, came to a variance board meeting to protest the building of this addition to the art gallery. Now, nothing could be more innocuous and quiet than an addition to an art gallery. But these people made the statement that if we allowed them to build this gallery, they knew that the gallery would then have to give dances for teenagers in order to raise money to pay for it, and that they would have an orchestra and they'd have kids out there drinking beer and shouting, and that they had their bedroom on that side of their house, and they simply couldn't sleep.

Well, this lady, she made quite a long talk about it. And I finally got her shut up. A friend of theirs who was with them got up and said that he agreed with them, and I said, "What's your objection?"

He said, "I don't have any objection. These people are friends of mine. If they don't like it, I don't like it!"

So this went on. There were some people from the audience, of course, from the art gallery, that wanted to talk about it.

And the reason, by the way, that this lady said they would have to give dances to raise money, she said the judge had allowed them to take some money out of their (this is a tax-free thing)—out of their investments to pay for the building, and she knew they had to pay that back. And so they'd have to get the money by dances, and so forth, and all these kids and their drinking, and so forth, would raise Cain.

All of a sudden, the man got up and said, "Mr. Ferris, would you please ask these

people to talk louder? My wife is very deaf" [laughing].

These are the things that happen. People come to these meetings, and some have legitimate objections and they are vocal; they can tell you what they mean, and others just wander on. Then they bring their lawyers. The lawyer will make a presentation. And the other side will say something about it. And the lawyer will get up and say, "Now, in rebuttal, I would like to say—" And right there, the gavel comes down.

Monk Ferris says, "All we want are the facts, just the facts, ma'am [laughing]. And we'll decide what we'll do with it. And we don't need any further arguments from you. You've told us what you think about it. We'll decide the merits of the case."

Oh, brother, did that make 'em mad!

And one night, I remember one of our boys, Pat—well, what do I try to remember names for? He made a remark that somebody was silly, and that sort of thing. I've forgotten the wording and the remark. And the reporter who always attended our meetings immediately grabbed his pencil and paper and started to write, and I said, "Wait a minute!" I said, "You're not going to report that remark." I said, "That was a slip. That's something that very rarely ever happens in our meetings, and we're not going to have that kind of report go out."

He said, "I'm here to report the news, and it's going out."

I said, "And so are you! And you'll never be back."

He said, "You can't put me out!"

"Well," I said, "try me!"

And the upshot of it was he didn't print this particular thing. And it wouldn't've done us a bit of good. It would've seemed that this was the way things went constantly.

So we had quite a lot of fun, I suppose. Then we began to have requests for signs on

buildings in residential districts, and it was all—it was really a lot of small stuff. And when Baker became mayor, he said he thought they should have some new blood on the board, and he allowed me to resign, or else.. So that finished the variance board. But I enjoyed that work for all those years.

And then I have been chairman of the Board of Appeals for the city of Reno for a number of years. We haven't had too many requests for action. But when we do, we have lawyers, we have real bitter hearings. I remember one when an automobile man was building a new garage, a million-dollar building. His insurance people told him he did not need to put sprinklers in the building, and the city building department said he must put sprinklers in the building, and the code requires, also, that sprinklers be put in the building.

So they appealed from the decision of the building department. And with their lawyer and their insurance agents from Sacramento, we had a hearing. The insurance people said that all sprinklers would do in a garage was to float the gasoline and oils around and spread the fire all over the place. And I said, "What gasoline? And what oils? The gasolines and the oils are in tanks underneath the ground. And they never have more cars in the place than they can work on. So three or four cars with a small tank of gasoline, well-covered and taken care of, is not loose. [If] a fire starts, the sprinkler goes on, and perhaps puts it out, immediately. So where are the gases and the oils to be run around with water from the sprinklers?"

Well, they had sold the owner of the building a bill of goods that this is what would happen, and he was very bitterly insistent that we were simply making it a dangerous thing in his building.

So I went to the Board of Fire Underwriters of the Pacific. Their engineer was a man who had been in building code work for the board for a number of years before, and I knew him very well. And I asked him what their experience was with these sprinklers in garages. He says, "Excellent, just excellent. We like them. Insurance men in Sacramento, trying to sell this bill of insurance, didn't want to have to knock down their price, which they would have to do if they gave credit for sprinklers. So that wound up—we made them put the sprinklers in, but this man has ever since felt that he was made to throw \$30,000 down the drain, and he never will think anything else.

That's the kind of thing, however, that always came before the Board of Appeals, always a complete difference of opinion which was never changed. They went away, both sides, convinced that they were right, just the same, and that we arbitrarily set the rule that they had to follow. It was not a very rewarding job.

I don't think of another one. Clyde Mast was on one side and so was (walker] Boudwin, and Clarence K. Bath and I were on the other side of the question, and we never, ourselves, were unanimous in what we should do. But it is quite true, that in the administration of a zoning ordinance or a building code, that there are always items (which) arise which require judgment. You cannot write a hard and fast rule which can apply completely to every little variation that can come up. Some of these people want to just read the book and say, "That's it." And this does not promote economic development; this slows it down. Well, that was the variance board.

How did we work out our relationships between the city council and these appeals boards and with the people who come in with

their appeals? well, there seems to be always a political undertone to a disagreement about zoning, about condemnation, and about very restrictive requirements of a building code, and it usually winds up with the owners going to their councilman and putting the pressure on him.

Now, we were going to condemn a building over on Peavine Street that was owned by a lawyer whose name again I do not remember. And it should have been condemned. I went over there, and bums, who probably were drunk as often as they could get drunk, would have a little room, and there was a lock on the door, a small cylinder lock. I had to fit a key just right to open it. Then a very narrow hail went out this way [gesture] with two or three breaks in the hall through these wooden buildings, two or three of them that had been put together. It was quite possible that in case of a fire, some of these people would probably never even wake up. So it was to be condemned.

This lawyer appeared before the city council and said that they would never condemn that building, and that he would never do anything to improve it. It had been there for a long time, and it was going to stay there. He had a couple of friends on the council with whom he was, I suppose, involved in business ways or political ways. And the result was that it never came to a vote at the council. And this is the way a great many of these things are handled. They die. This is the easiest way to do it. There's no use getting up and having a great big hassle about it. They die.

Now, I remember when they were trying to fire me as building inspector. The plumbers came before the council and said that unless I was the architect (I was doing architectural work at night)—unless I was the architect for

a job, it was very difficult to get a permit. And William "Rags" Justi, who was a councilman, had a brother-in-law, Jones, who had been building inspector before me, and he wanted to put him back in. But Jones had been let out when I was appointed.

Well, see, August Frohlich was the mayor. And he was a good friend of mine. And the result of this meeting with— oh, Ruth had a tremendous lot of paper clippings of "Building Inspector Defends Himself," "Plumbing Inspector Attacked." And they had headlines in the paper. She had a whole gob of this stuff. I threw it away.

The upshot of it was that nothing was ever proved in any way. I was never acquitted. And there was a board of appeals, and one of the plumbers on that board (this was a board of the plumbers; that would be it) —one of the plumbers on that board resigned. And August Frohlich did not appoint a successor, with the result they never met to consider the matter and report back to the council. And it just died right there. That's one of the ways that they handle these things.

Of course, another way they handle them nowadays is go to court. But there was very little going to court in those days. Things were, "Let's don't get ourselves Gut on any limbs," "Let's don't get into any big fights. If it looks like you can't get any place with this thing without a tot of trouble, let's just forget it, leave it." And there was a lot of that went on.

How about the corruption issue? Well, now, when I became plumbing inspector, I went out on one job the first time, right early in the job. I went out on one job that was having some additions made to their plumbing and made my inspection. And when you make an inspection, you're supposed to put up a red card that you tack on in a place where it's visible, and it says that you inspected this,

that, -and the other thing, so much money was paid, and it's passed, okay. I found one of those red cards shoved up in between the casing of a window and the wall, in the little crack there, and it was shoved in. I picked it down and looked at it, and I was curious, so I went and looked for the permit that had been issued which shows that the money had been deposited with the city. And no permit had ever been issued. I found a number of those instances in which there was evidence—this was not evidence. This is a fact, what I found there. There was a receipt for money, and no permit was issued. It was only five dollars, or some such matter. But there were a number of instances like that in which, quite evidently, inspections had been made and money collected, and it had never been turned over to the city.

Did I see people attempting to buy variances or zoning changes? Never, never have I found anyone attempting to influence the board by means of a present of any kind—money or percolators, or anything else—in all the years I was there. As a matter of fact, we never did have anything big enough and important enough to justify such an approach.

I can remember one thing that happened. When we were applying for the—now, this is as an architect—we were applying for the job of designing the big auditorium out there on South Virginia, the Coliseum, and we had three votes, I believe, at the time, out of five. And my partner had run for Washoe County commissioner against the man who beat him and became the president of the committee to select an architect for the [laughing] Coliseum. That had been a rather bitter campaign. He would wage that kind of a campaign.

So one of the men of the board, who was supposed to be on the other side of the fence (he was a city councilman), came to

see me. And he was a man who had been in the flooring business, floor tile. And he had put down a floor at St. Mary's Hospital, where I was the architect, while he was in that business. And I turned the floor down, made him take it up and do it over with the specified materials and glues, and what have you.

So he came in to see me, said that he knew I was an applicant as architect for the new Coliseum, And he said, "You know, you cost me \$500 when you made me tear that floor up there at St. Mary's." And then a little later, he said, "You know, I'm going to be running for city council shortly, and this is pretty expensive." And it was quite evident that he was waiting for me to offer him some money. And at that time charges were flying around that architects had given Cadillacs to members of this committee in order to get the job. Well, a \$5,000 Cadillac—in order to get that kind of a job, your profit'd be gone. It's absolutely silly! But this guy, he wanted five hundred or a thousand dollars, and evidently, he would vote for me if he got it.

Well, I'm silly. I don't do that sort of thing. So we didn't get the job. And that's all right. We've got plenty [laughing] of work anyhow.

But I don't know, of my own knowledge, of any great deal of corruption in Reno's government. I know that Mike Knox, who was a member of the city council, was absolutely incorruptible. I'm absolutely certain of it. I'm quite sure that August Frohlich, who was a mayor, was incorruptible. I think Mr. [John A.] Cooper, who was a mayor, was incorruptible. And so was—oh, the guy before him. I don't think there was—that I know of my own knowledge—of any great deal of corruption. Oh, some of it went on, unquestionably, but I don't know about it.

[What sort of attitudes of my own did I bring to these planning and zoning boards? What is my philosophy of what city planning

involves, of what zoning should be?] Well, city planning and zoning is a question of selecting those portions of the town suitable for certain businesses, certain activities, keeping in mind access to the city, egress from the city, and the volume of this kind of business that has to be handled, and the fact that you have—you will undoubtedly have overlappings in between any lines you may set up, as, here you may have manufacturing; here you may have ordinary business; here you must have residential; here you must have estates of an acre, no less. In Reno, for instance, when I was thinking of zoning the land east of the hospital for industry, we had two transcontinental highways, SO and 40, coming through Reno. We had two transcontinental railroads in Reno, SP and the Western. We had airlines; we had trucking facilities, and a new road, Kietzke, was at that time being thought about, and they were also talking about running Plumb Lane clear through and to join [Highway] 40 at Vista. And we had a freeport discussion coming up (this was several years before it finally went into effect). So it did seem that there should be a division of the areas of the city, such that those areas that were convenient to transportation, to water such as we can get in the wells out there, to sewage disposal which was right handy to that area could go into heavy industry, and that the areas that were going up to the southwest, up the hill toward the mountains, were ideal for residential areas.

And I thought at that time that this is the way the city would go, mostly, and that business would go out South Virginia. Because I figured that with the industrial development to the north—Timber Road and that place, the University, the Catholic cemeteries, and so forth, that there was a whole line that would block off any important development in those areas and to that direction. This has been fairly

true. The development that's gone out there has been because land was very cheap and they built cheap houses. This has not been an outstanding residential development that went out in that direction. Now, it could have gone up the river, too. But I thought that the better residential section would go to the southwest, and that business would have to go out South Virginia. These things are gradually, it seems, coming about.

I did not at that time have any conception of the number of people that might be here and the congestion that is resulting, for instance. You take the Riverside Hotel, Holiday Hotel, the Post Office, and we had the State Building (now the Pioneer Theater Auditorium), and the Mapes Hotel, and the Masonic Temple building, and the river. There they all are. A great gob of people can be brought together. And there is no way for them to get out except to sit in their cars, bumper to bumper, and take their time. And I thought that something should be done about that. So we recommended (when I was on the planning board) that they set aside an area from, say, Center Street on Mill east for four or five blocks, and then go south for four or five blocks, and set that aside for a development for the city—libraries and auditoriums and parking, and so forth. This caught on for a while. But the difficulty of buying these people out, getting the land, closing off the streets (there would have to be a couple of pretty wide through streets through the area if you closed off that much land)—. And it fell through, so that we now have a Pioneer Theater down here where you can't even park a car, and a Coliseum out four or five miles away, instead of having these things nearby.

Another thing was the concessions that could be set up. (And my experience with concessions, I'll tell you about that in a minute.) The concessions that could be set

up where you had these things concentrated, and a great number of people who could use them in one place and still have parking, could get in and get out, the concessions would be extremely valuable.

Now, when I was building inspector and we were pushing the idea of a civic auditorium—. Later on, we tried to design one in the high school, but it wasn't big enough. We were pushing the idea of a civic auditorium. And I took a trip and visited auditoriums in Fresno, in Oakland, San Jose, in Portland, in Vancouver, in Edmonton (Canada), and I got their yearly uses and found, for instance, that in Fresno, they only allowed the use of a very beautiful auditorium for fiestas and a very limited number of events because they didn't want to interfere with the use of downtown facilities. In San Jose, I found an auditorium that had put on 1,050 events in the year proceeding when I went there. With a crew of only seven men, they could set up for a convention meeting in the morning, for a women's big affair in the afternoon, for a fight or a wrestling match at night, and go right back and do lit all over again next morning. And that auditorium was paying off its principal, its interest, all of its expenses, and showing a little profit. The Oakland auditorium was doing the same thing and showing a— well, it was paying its way; there was no particular profit.

So we worked out the details of an auditorium in Reno, not a plan of a building, but a plan of operation, such that, as I recollect it, we figured there would be four people to a car. So for whatever the population is going to be, we would want parking spaces for that many cars, and then we would add twenty-five percent of that space to take care of buses and commercial vehicles, and that sort of thing. [We estimated] that there would be one garment checked for each six persons,

and we wanted checking facilities spread around so that people had a chance to walk up without getting in lines, long lines, and get to their coats, and so forth, their wraps. We wanted to be able to sell all sorts of dogs and popcorn and drinks, and that sort of thing, so that there would be available to you one of these counters where you could get them, and one person would be there. The kitchen for these things would be in one place, and they would be handled from the basement, and there would be dumbwaiters to these small things so that the supplies kept coming up hot from the kitchen. We were told that the profit in running any one of these things came from the concessions, not from the tickets that you could sell. You couldn't make it go on the tickets. This was proven in Portland, it was proven in Vancouver, it was proven in Edmonton that they were not making money, and that they did not have adequate facilities for parking, or putting away garments, for selling popcorn [laughing], and that sort of thing. That's where the money is, and the theaters have proven that with their sales. You can't get to the counter. They're selling stuff all over the place. Movies are really making it, more from their concessions than they are otherwise.

So we worked this all out, and we worked out the territory that we would need, we tried to set aside that territory for a beginning with an auditorium, and that was it. It just flopped. Nobody was interested. They didn't care [laughing] whether we'd made the trip or not.

These sidelines have been my meat, the Uniform Building Code. I've loved that work. And I'm still in it! I get every now and then a letter saying that we have this problem that has come up, and it does not affect the meat of the Uniform Building Code, but it affects the enforcement of code provisions by, particularly, the smaller cities

that don't have a lot of technical men who can defend themselves against the attacks of a big contracting firm. You know, when some contractor builds work all over the world and knows the codes of the states, the nations, and what have you, and they come in and they want to do something that saves them quite a lot of money but it's contrary to your code, all of a sudden, you have to know what you're talking about or they beat you down, and they do it. Some other one of the smaller operators in your area comes around and wants to do it and you say no, and he don't know how to argue with you. So you win that one, and you lose the other one—same thing.



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## SOME OF MY IMPORTANT ARCHITECTURAL JOBS

[What were some of the architectural jobs through those years that I was the building inspector?] Oh, [there] was remodeling of the Elks Club—. [Laughing] Boy, I've forgotten! Elks Club. Oh, I did some residences, and I've forgotten who they were for. One was for the funeral director, Ted Grosbeck. So I did some houses, and I did small jobs, \$40-, \$50-, \$60,000, which I could do at home.

I was thinking I remodeled all of the Carson buildings during Balzar's administration, including the governor's mansion and the orphans' home, the armory, the capitol building. And I did a complete remodel of one of the—I don't know what they called it. I think it was the supreme court building, to make it available for the highway department. I'd forgotten about those. The governor's mansion when Balzar was there was quite interesting. He made quite a bit of his expenses through a poker game. And I think that the people who were invited to the poker game were invited to lose [laughing]. He had a cellar beneath the stairway to the second floor—big barrel of beer in the end, I

remember, and it was just stocked with booze of all kinds, and this was in Prohibition times, when booze wasn't bought. He was the sheriff of Mineral County before he became elected. He was quite a character.

And then there was [George] Greathouse, who was his secretary of state. He was the former recorder, I think, in Elko County. I knew him up there, and I knew him. I was trying to think of the name of the attorney general at that time. [Gray] Mashburn's the guy I'm trying to think of. When I was doing work down there and I wanted to get hold of the capitol commissioners, and I tried to get hold of Mashburn, he was always busy and in conference, and one thing and another. So I'd go out in the hall about twenty feet from the door to his office, call him up on the telephone, and he'd say, "Well, haul your fanny in here!" He had his feet on the desk, smokin' a cigar [laughing]! But his girl always had him "busy."

I remembered one of the early jobs that Father did, which was tied in with St. Mary's Hospital, for whom I worked for nearly forty

years. It was a school in Benicia, California, for the Dominican sisters. t that time, an architect could go into the state of California without asking permission from anyone. This will be interesting later on, when we talk about changes in the profession. He did the school there, and later on, I did a new operating room in the convent across the street from St. Mary's Hospital, on the third floor, yet. And they had no elevator. And they used that as a hospital and operating room there. Then, sometime later, an architect from San Francisco named [Willis] Polk [and Barrett and Hilp, contractors] did their first unit of the present hospital. And thereafter, t did all of the work on St. Mary's Hospital to date. And it was all done with Sister Seraphine as the administrator. I, as a Mason, Protestant, worked with Sister Seraphine beautifully over all those years.

We did St. Mary's in several units. There was an east wing (and I don't have the dates for these things in my mind at present); there was a west wing; there was an addition of two floors to the west wing; then there was a rather massive addition which covered nearly all of the block, and which can still take two additional stories. St. Mary's has over three hundred beds now, and could go to close to five hundred beds. That was one of the early jobs, and I had many continuing jobs.

Another contact that I made was with the bank, First National Bank, at the time when Mr. [Ed] Questa was the president. And I had known Mr. Questa from school days, practically. And I was associated with the First National Bank, then, for a good many years, doing banks throughout the state. I did banks in Las Vegas, several of them. I did a bank in Tonopah, in Yerington, in Carson, several banks in Reno, and at Elko. I lost the bank business because when Mr. [Bert] Fitz called us and asked us to do two banks and I was out

of town, Mr. Erskine simply told him, "He's too busy." And Mr. Fitz got another architect, and that other architect did all of their banks for ten years as a result of that. I could be a millionaire. Well, that's the bank business.

[What are the special problems involved in designing and supervising the construction of banks?] Well, a bank, naturally, is a business with all of its own peculiarities. It has to serve the public with the public inside its building. It has to provide access for the public to make deposits at night, and that sort of thing. It needs to have a plan where officers and tellers may contact one another without going across "public" space, which means that the ideal setup would be a "U" design for the tellers, the officers, and all of the workers. So the public would come into the mouth of the "U," and there was contact in private areas for all of the rest of the employees. The bank naturally must have its safety deposit boxes, and they must be accessible to the public, and safely so.

Then, of course, it has its vault with the vault doors. They are a problem in themselves. Usually, the manufacturer of the vault door comes with his door and approves the construction that has been left to receive it, and installs it himself. Frequently, in banks, it's necessary to reinforce the floor in order to take the vault door across the floor to its opening, where it's to fit.

The officers, also, besides being able to communicate with all the parts of the bank in private space, must also be accessible to the public. There is a great deal of checking that has to be done, and there must be facilities for that. Sometimes these banks have TV, in which they can have a teller's window—a drive-in window, we'll say—outside the bank. Any documents that have to be checked by that teller, she has a public address system (or he), and he says that he has Mr. So-and-Po here for a check cashing, and he wants

to know whether or not the account is up to date, [whether] there's enough money in it, that the check is good if it's a foreign check. And if any papers must be shown, the teller can put papers down on a glass plate, and a TV screen shows it to the people in the bank. Otherwise, it would be difficult to handle, such as the South Virginia bank, where we have two outdoor tellers. Also, there is a problem of safety, of burglar alarms, the possibility of camera surveillance, and that sort of thing.

And with all that, the bank must be in keeping with its background, or whatever I'm trying to say now. It's not background, but in keeping with what people think of a bank, as class. The surroundings must be very nice—not luxurious, but nice.

In the small banks, the only real rooms that are necessary are an accounting room and a conference room and a couple of offices. In the big banks, they have whole floors that are taken over by people with trust departments. That trust department is another section of the bank that perhaps small banks don't have. But in Reno, for instance, where so many people have in the past come on account of a tax situation and created trusts, they have a tremendous trust department. So much for the banks.

Then there was the National Guard. We have done National Guard armories in several cities—Las Vegas, in Lovelock, in Reno, in Carson. We did in Carson not only an armory and machine shop, but offices for the National Guard. And there was one incident, I remember, in connection with the National Guard that points up some of the difficulty of dealing with governmental agencies. I went back to Washington for a conference in the Pentagon with a head of National Guard construction in the United States. Me was a colonel.

By the way, I went back in one of these National Guard trainers, a two-seater. And I had a flying suit which was a little short from the crotch to the shoulders, and I had a helmet which was a little small, with the result that I was really all jammed up by the time I got back to Bolling Field in the East. And my glasses, the temple—well, there was a line in my head on each side where this had been pressed in [laughing]. And the radio simply goes continuously. It'd drive me crazy) And it's just narrow enough so that I could keep my elbows almost in front of me, a very narrow little place to sit. And you have a parachute on. You're sitting, of course, on the parachute, with all the harnesses on. And they say to you quite calmly, "If anything happens, I'll press the button and it'll eject you. And then you count ten and you pull this little string, and you'll be okay" [laughing].

Well, I got back to the Pentagon. And this gentleman (I do not remember his name), a colonel, I had talked to him on other occasions, very pleasantly, and I couldn't get to see him. I stayed in his office there for, I guess, an hour. The girl always said, swell, he hasn't come in yet," or, "He did come in, all right, but he's busy, and what have you. Finally, her telephone rang. The talked—I'm sure she was talking to the colonel. And she said, "Will you see his civilian counterpart, please? So across the hall I go, and here's a fellow who is just up in arms with importance about his job. And this guy that's come in from this little town of Reno and trying to talk about National Guard construction. And he was very difficult.

So when I got through with him, I still had some things that had to be changed, that's all there was to it. I went back into the office and I told the girl, I said, "Look. Now, I've done my business with this gentleman across the

hall, and I want to talk to the colonel, just as a friend. I know him quite well."

"Well, she said, "I'll see if he's in."

And he said, "Come on in."

And I found out why he wouldn't talk to me about this job. His tour of duty at the Pentagon was terminated in two weeks. He had put in for a station, and he thought it was very favorable then that he would get this assignment to the station where he wanted to go. And he was not about to get into any kind of a controversy about building with anybody, that for the next two weeks, he was simply alone, unavailable, until that came through. This'll give you an idea of one of the little things that happens.

Mother job that I did was for the Navy at Fallon. And this was an antenna field, a directional radio installation for bringing the planes into the field. And it was very fussy. The two buildings I was building had to be precisely one mile apart—5,280 feet, period. And other things. The antenna field, which means a lot of poles stuck around with wires between (that's what they call an antenna field), that had to be exactly as designed by the experts—poles just so far apart, and all that sort of thing. And they sent up a young lieutenant as an inspector from the General Services Administration. And I finally had to go down to California and see the head man to even get this job off the ground. This kid, he was very eager and he didn't know too much. So I got some help and got the job started, but this kid continued to give reports about the "stupid architect," with the result that I finally got a letter from the general. Where is this—there's a little town right cut across from the airport down there. That's where their headquarters is. I can't think of the name of it. The general wrote me a very rough letter about my failure to cooperate, and this, that, and the other thing, and that perhaps it would

be better if I didn't apply for any more jobs from his department.

So, on another trip down there, I went in to see the general. I got in to see him. He was extremely pleasant at first. And I said, "I want an explanation for this letter, that I will never do another job for your department." I said, "Here is a young man out here who has given you, evidently, many reports about me, and I have never been asked to explain any of them at all. I just get a letter from you that I'm through with your department. And," I said, "now, I want to see if I can't get you to sit down in your office for a short time, check into these things and find out what the score is, rather than going out and playing golf every afternoon and going to cocktail parties every night," which he did. And when I said that, I happened to be a little red in the face, and, of course, it terminated the interview very quickly [laughing]. But these are the sort of things, and particularly with the service.

some contracts are beautiful, and some contracts, such as at Stead Air Force Base, where we did 645 living units for the Air Force, we had a contractor from Los Angeles who was on the make. He wanted to change everything to cheaper materials, and he was just trying to make money right and left. He had a very low bid. His bid was eight million dollars, and I think the next bid was nearly ten million dollars. So obviously, this man had to get some money someplace. And the result of that was I was continually turning down things that he did, and demanding that things be done over. I had to make daily trips out there, which an architect don't normally do. Sun's so hot. I can't even

The next thing I know, I got a letter from—I believe it was Texas, a general there, asking me to come to Texas for a hearing. And I sort of said, "The heck with that. If you want a hearing, come on out here and have one!"

So they did. They brought twelve or fifteen supposed experts out to go through this job with a fine tooth comb. And they took eight-by-ten pictures, and on the back of each picture they typed quite an explanation of this item that was defective. One of the things was the floors that were cracking up. [Laughing] And I had notified their authority on the job. I couldn't tell the contractor he had to do anything. I had to give the information to their authority on the job, and he told the contractor. But he didn't tell him.

Well, the result was that they came out and they thought they had me tied to the cross. And they did schedule a hearing, and there were two generals to head the hearing. And they had a young major as their attorney. He was a Jewish boy. And we started going through this thing, and every time they got one of the pictures, I had a letter—perhaps two or three letters—to this officer at Stead Air Force Base, who was in charge of the construction for the Air Force, delineating what was being done and making a recommendation of what should be done. And that's all my job requires me to do as an architect. I can't tell a contractor anything because I have no contract with him.

Well, very shortly, the general got a little bit tired of this because they weren't looking too good. And this little—[laughing] this little major was getting nastier and nastier, and I said to him, I said, "Major, are you a graduate of West Point?"

He says, "Yes, I am." "Well," I said, "that's funny." I said, "I had always heard that West Point turned out officers and gentlemen. But you only got half of it." Boom!! The general stood up and said, "Now, this will do!" [laughing] And he looked around for a minute and he said, "Well," he said, "I think the best thing to do is to start fresh. We will dismiss all of this material, and we will start fresh. And

we will provide twelve inspectors to work under Mr. Ferris," because I couldn't afford to hire the number of inspectors they needed. I only had four inspectors. And they'd provide the twelve and pay their expenses here, and their salaries and everything, "to work with Mr. Ferris."

And do you know, in a week, you couldn't find a document on that base about what had gone on before? They were out, destroyed. You'd have to go to Chicago or back to Texas to find a single document of what had transpired before this took place.

So it points up the fact that to do work with organizations in which there's a chain of command, with one man protecting his job so the next man can protect his job, and this man to his job, that it requires experience, a knowledge of what can take place—what probably is taking place—on the part of a contractor with the government in order to keep things running smoothly. It requires, sometimes, a little compromise with your own conscience. And these compromises come about by reason of the fact that [there're] certain things you can not do. You can't win. And the best thing for your job, and the best thing for your client, is to get as close to the right thing as you can, or else get fired, one of the two, and who wants to get fired?

Well, that takes care of the government. Now, we had been doing a little Catholic work for the Catholic church besides St. Mary's. I remember one of the jobs. They thought the tower on the church at Virginia City was leaning badly and might collapse. They wanted to find out how safe it really was. I got trapped in that tower. I could go up through this hole in the floor, but when I started to get down to the ladder, I couldn't cock my legs to get down through the ladder—through the hole. Took quite a while to get me out of there.

Another thing that I did, I got out on the ridge of this church [laughing] and inched my— The ridge was about like this (gesturing), very sharp. I inched myself away so I could get a look at the tower and plumb it. And when I got out there and I started to come back, I happened to look down. And I was up about four or five stories in the air! I tell you, I had my fingerprints in those shingles coming back down [laughing].

Well, let's see. I guess the next thing would be schools. Now, my father—I have told you of the schools he did, Reno High School and Mt. Rose, and—four or five of them. We did schools in Lovelock; that was a high school. ? Where'd we do schools, for heaven's sake? In Minden, in Carson.

I had a very interesting job in Carson. The school burned. It was burned out. It was a—the building is still standing there, although it's now abandoned. I was going to repair it, build back the floors, and so forth. And there was a mass meeting headed by a carpenter who said that this should be torn down, it was unsafe, and that I should be eliminated from the picture.

Well, I got by with this, and I built the school. And shortly after I built it, a terrific snowstorm came along with a wind, and it drifted snow on the level from the peak of the roof right out to the eaves on the other side. You couldn't've got that much load on it again in a long time. The school never budged. So they used it from then on for, I guess, twenty years until they finally abandoned it.

I did the Fourth Street junior high school, which has now been torn down. I did B. D. Billingham Junior High School, which is still in use, and which there was a great controversy at one time about the number of exits because they had a fire, and I had to repair the building again, put it back in shape. And at that time, quite a discussion arose

about the number of exits in this school. It developed that there were about eleven exits, eleven ways to go, which is far too many in any two-story building of its size. But in order to satisfy the PTA and others interested, a steel set of stairs was put outside from one of the rooms as [laughing]— as another exit. It couldn't be very effective. But this is the way things go when the public gets into the act. They can really raise Cain.

Then there was the E. Otis Vaughn Junior High School. And about that time, also, there was the Reno High School. This Reno High School is the first big high school in the city. And in order to secure duplicate use of the rooms so that a room could be used every period of the day by a class, we put small offices with the rooms, such that a teacher who used the room most of the time would have a place to work, to confer with the members of the class while some other teacher used her room. In order to do this, we had a schedule of classes made out for a period of ten years, supposedly. This was looking ahead for a period of ten years to bring the school up to 2,000 people, which was its ultimate capacity. And that capacity was possible only because we had these small offices. So before we designed the building, we had a chair in a room for every single student in the high school at 2,000.

And then we went to work to design the school. We used in that school, for the first time in Reno, radiant heat in the first floor, which has been very successful. We used a heating system which has been the most economical in the school system of this area ever since it was built, in which we simply took a very large steam pipeline (I think it was a ten- or twelve-inch line) down a corridor underneath the main corridor on the first floor (this is underground). And wherever there were four or five or six rooms that had the same exposure

to the weather and to the winds, we would put a thermostat in one of those rooms. We would then take steam from this pipe and run it into a heat exchanger which made hot water. And there were pumps on the hot water and they pumped it through the pipes into the radiators and into the first floor. It was through the pipes under the floor, the radiant heat. And so we had, in effect, one central heat supply and many small heating systems, all of them available for repair by a man standing up with an electric light near him. Because with this corridor—a man could stand up in a corridor, and everything was there except the pipes that carried the hot water.

[Laughing] Funny thing happened there. Savage had to do a little plumbing job and drilled a hole through the floor. And his man just drilled a hole right straight through those wrought iron pipes down in the tube, went through the whole thing. And they covered it up. Savage knew about it, but he didn't want to fix it. He says, "Oh, well, this is only one room anyhow. It'll keep warm. The rest of 'em on each side, they'll keep it warm." [laughing] So we had to find out what was happening and dig down and repair the whole thing, and Mr. Savage paid the bill for that, of course.

During that job, we had a rather high wind come along. We had finished the roof over the gymnasium. The gymnasium was 112 by 160 feet in area. And in the roof of the gymnasium, we had two twelve-foot square openings that were open to the air. They had a series of pans underneath that would stop all water, moisture, and so forth, from getting through, but it also allowed venting to the atmosphere from this room.

Well, a wind which later turned out to be only seventy miles an hour came up from the southwest, blew across the top of the gymnasium parapet (this parapet was only about three feet higher than the surrounding

roof), creating a bit of a vacuum on the lee side. We had, in place, a tar and gravel roof, which weighs about seven pounds to the square foot and is shower nailed into the roof materials. And the roofing materials were three-inch thick plank. This wind, or this vacuum, tore up a section of that roof about twenty feet wide and nearly 160 feet long (there was some protection on one side), tore it loose and threw it back over the parapet, and left it hanging down on the outside of the wall. This seems impossible, because the roof—without any nailing to a subbase, the roof is so stiff that you can't take your two hands and bend it much. It's a heavy roof.

Well, in explanation of that, we asked the University to give that material to someone and find out why this happened. He said, "Well, it's simple." He said, "Your air pressure here at this altitude's about twelve and a half pounds to the square inch. And," he said, "if you lost only one pound by the creation of that vacuum, that in one square of roof, you would have a pushout from the inside to the outside, where the pressure was less, the air pressure, of 15,000 pounds. And a square is ten feet by ten feet, a hundred square feet. There would be 15,000 pounds pushing out on every square of roof. Your two twelve feet by twelve feet vents, under all normal conditions, are sufficient to vent a difference in pressure. They could let some of the air out and drop the pressure in the gym so there wouldn't be a tendency for the inside pressure of the air to push anything out." But this happened so fast they wouldn't function. And it just pushed it right out and over the parapet. And I've never seen it since, although people do tell about how their roofs are popped off their houses in high winds. This was a very odd experience.

We had quite a cafeteria in connection with that school, a large one, although there's nothing in connection with that.

We had a portable stage. we had a portable stage in sections that could be rolled in and set up so that you had a raised platform. And we had down the wall (and it's still there; you can see it) the cables for the tormentors and for the overhead scenery, and one thing and another, all counterbalanced, ready to go, so that you could hang almost any kind of a scenery set that you wanted and control it from these cables over on the wall. We had a rolling electrical setup which took care of all the stage lighting, which is also hung from these cables, and is separate from the lighting of the gymnasium itself. It also had dimmers. This thing was about ten feet long and seven feet high. It was a big switchbox, believe me, and very heavy. You could dim half of the lights in the gymnasium so that for, oh, musicals (if they were going to give them that sort of thing), there'd be sufficient light to look at a program, probably, and it was otherwise dim. Or you could cut them down to almost nothing. You had theatrical control. But it never worked out. It was too much trouble to set it up and get someone that could handle all of these different parts of it, although I know the Shrine, for years, used the gymnasium for their big ceremonials. It has never been very successful.

However, there are a couple of items in connection with that school. One was a survey I made of the probable school population of the city in a ten-year period. And I got information from the Post Office; I got information from the Census and particularly from the chain stores, and a bank, as to what they thought, or what was projected—and also, the telephone company, but they didn't have too much at that time. However, I came up with the idea that in ten years, Reno would be 75,000 people; that was in 1957. And I think that's about what it was in 1957. And the telephone company, at about that time

(1957), in making a survey of their own, asked me for a copy of this survey so they could see how it was arrived at. Well, it was arrived at—. The city also had records, and the sewer connection records, and that sort of thing. They were all valuable.

There was then the recommendation that they get a bridge put across the Truckee on—well, where it is now, Keystone, and go straight across to California [Avenue]—or not necessarily straight, but across to California, and then cut through that bank into Sharon Way, which would give them, at the high school, California Street for an east-west through street, and Keystone and Sharon Way for a north-south through street. Of course, they didn't do it. But today, they have a bridge across at Keystone. But they did not go through and connect with Sharon, which was a logical thing to do. They wouldn't have any more trouble at the intersection than they have now. That was a second item. [This was one of the first buildings that they tried to bring the teachers in on designing?] Yes, oh, we brought the teachers in in gobs. And strangely enough, they were at sword's points when we started. Teachers had different overall ideas as to what should happen and how it should be done. And it wasn't very long, after a short series of meetings, really, 'till these teachers were all coming into line. They were agreeing on certain fundamental things that they thought would be excellent. You would think, when we started, that they would never get together. But they did beautifully. And, of course, the idea of projecting classes for ten years had never been done in this area. And I think it was very successful in conjunction with that school.

Oh, here's something else that happened. The school is a reinforced concrete school. And in order to protect it in the case of a serious earthquake, it's built in three sections.

There's a central section, which is about four hundred feet long, and then at right angles a northern section, which is another three hundred feet long. And then there is the southern section containing the gymnasium and that sort of thing. (I want to tell you about the band room, too.) These separations are two-inch separations. And today, if you go into that school and look at one of those—they're covered over with copper that is flexible, bends back and forth. And these things move, believe me! If you look at this two-inch separation as marked by the copper cover on the first floor, where the heat is radiant heat, there is almost no difference (between] winter and summer. And it is two Inches wide. But if you go up to the second floor and look at the ceiling in the summertime, you will find that it's only about three quarters of an inch. So these big concrete buildings have really moved. This is the summertime, and the heat, it expands the concrete.

However, our thought in covering this building was this: we could build a building of reinforced concrete. We could set up standard forms, unit forms, and we could use them over and over, as long as they would stand up. As long as they'd hold together, we could just keep using those forms. And we made those forms for three bays of the building at a time. And, of course, they left a very patchy and a very rough surface of concrete. We did not spend the money on finish forms and on the finishing work for concrete, and on the painting and continuous painting of concrete surfaces that would have to be done through the years. We came back, then, and we covered the entire exterior with one layer of brick, four inch layer of brick, which we knew would never have to be touched, unless they have to go and point the joints sometime, when some of the mortar has softened. Nothing has ever been done with that exterior to date.

Well, there were a couple of ladies here who had been very vocal in opposing the location of the school in that area, which they called a swamp. And they, in hearing of this extra lining of brick throughout a building that was already built, raised quite a bit of commotion, and finally went to the members of the legislature. And they told them that we had spent \$500,000 unnecessarily in covering the building with brick.

So it was necessary that I work out, then, the projected savings as against the cost of the brick. The cost of the brick was only \$34,000. The projected savings had to do with savings in form work, and savings in finishing, savings in painting the exterior of the building, and very particularly, with savings in heating and cooling. And we did have a little cool air, not air conditioning by any manner of means. The savings are very real. Because that extra four inches of brick plus the mortar that went behind it, making the wall instead of eight inches nearly thirteen inches thick, made a building that was much, much easier to heat, took lots less fuel and a much smaller (heating) plant—about twenty percent, as a matter of fact, smaller plant.

Well, this is *comme ci comme ca*. Maybe it's true, maybe it's not. Maybe it's too much, maybe it's too little [laughing]. But this I had to do. And that killed that particular fuss.

Oh, there was a big fuss over the tile in the hallways. Now, our theory on putting tile in the hallways was that here is wainscot that will be as good in ten years as it is today. It cannot be scarred; it can't be written On; it can be cleaned with a wet rag. And we figured that there wasn't too much of it because there're a tremendous number of lockers in the same area where the tile is. It has proven out in the long run, that, as of today (and this is eighteen years since that school was built), that tile is just as good today as it was when it was put up.

And there has been no problem in painting it or cleaning it. So that also stood up.

I'll tell you a real funny one. We had a ten-inch water line coming into the building. And we had to have at each end of the building a connection for the fire department at that water line. That water line was a cast iron coming up to the building while it was underground, but there was no need to spend that kind of money for protected steel inside the building, so we were using galvanized iron, which meant that we had to connect the galvanized iron to the cast iron. And this was done in the normal way. The galvanized iron ran into a bell, and there was some caulking and so forth put in. It was perfectly tight for the pressures that were expected, which was sixty-five pounds to the square inch.

One day, I was standing very close to this connection in the south end of the building, and we were testing the line to make sure that it was watertight every place. And there was a gauge on this pipe that I could read all the time, and it stood at about sixty-five pounds. I was talking with someone. I turned around to glance at the gauge, and it said a hundred and seventy pounds. And I looked at it again, and I said, "Did you see this?"

And we looked back, and it was almost back to sixty-five again. And this plumber said, "My God! That was a hell of a surge."

Well, there are increases due to surge, and we didn't have any standpipes in the line—the power company didn't have any standpipes in the line. So if there should happen to come one of those surges, the pressure would increase. What this meant to me was that if that surge came on and hit that joint between the galvanized iron pipe and the cast iron pipe and broke it loose, I'd have a ten-inch water line running into that basement with about \$300,000 worth of damage done in ten minutes. You never saw anybody get action

so fast! I had collars made and welded to this cast iron pipe, and collars made and welded to the galvanized iron—in fact, with bolts between them [laughing]. We bolted both of those connections. Brother!

Another thing we did in connection with that building due to the commotion about its being in a swamp (and actually, Smith-Peterson had a sand and gravel pit out there. That's how much of a swamp it was), we put down a well for a year before the building was started to see where the water level was. And the highest the water level ever got was sixteen feet below the ground. And our building is only ten feet below the ground at the lowest point. So we had no trouble there.

They had a creek running through the site, and we had to build a culvert, and this was a reinforced concrete culvert about ten feet wide and about four feet high underground. It took the creek down and bypassed all of the site and then went to the river. And we had to protect both ends of that against rubbish and kids with iron grilles, steel grilles. And I tell you, for a time there, the rubbish that gathered on those steel grilles almost made the little creek overflow and back up into that housing development [laughing] there. But we got there with the whole thing. And I believe that this has been a very satisfactory school as of the time that it was built, and for quite a period after it was built.

Well, there was some uproar in the community [regarding the Reno High School].\* The architects have no approval of subcontractors. They have the right and the necessity to recommend to the owner of a project that he take certain steps, whatever they may be. They have the right to say to the

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\*See *Reno Evening Gazette*, September 14, 1949

owner, "Of the subcontractors offered by this general contractor, we feel that these two men are controversial. They're not up to snuff, and we would prefer other subcontractors more acceptable to us (and should be to the owner) be submitted."

It develops, however, that in general, if you change a subcontractor on a building, and his bid is, we'll say, \$10,000 higher than the subcontractor's bid which has been accepted—. Now, these subcontractors do not bid to the owner, you know. They bid to the contractor, who is going to bid to the owner. If you switch—if this man makes you a bid and he has made it, accepting this bid, which was \$10,000 low and you say, "I don't want that man. Take the next man," and it's \$10,000 higher, he says, "Okay. Give me \$10,000 and I'll take him. But I'm not going to put up \$10,000 that I didn't figure because you don't like my man." So immediately, here comes a man [who] says he's good. I say he's not good. Who's right?

Well, sometimes you find out in a court of law who's right, for maybe \$10,- \$15,- \$20,000 of your money [laughing]. I don't recollect in Reno High School what I may have said about subcontractors.

There was one thing that happened in the Reno High School. We put down a concrete floor and finished it. And the temperature dropped from about a seventy to far below freezing, like twenty [degrees], in three or four hours in the afternoon. And it froze the floor, but it didn't freeze clear through the floor; it froze the surface. And the question became, "Now, is this floor strong enough? Can we take off the frozen stuff?" which does not set up like concrete. It sets up like ice, and you can chip it off when it gets warm.

So when you've got a floor that's that thick and you freeze that much of the top material that does not act as part of the floor, if a

floor is six inches thick and you lose an inch, you've lost one sixth of the floor—you've lost one sixth of the floor depth. The difference between twenty-five, thirty, and thirty-six—six and twenty-five is twenty—you've lost almost twenty-five percent of the strength of the floor, because strength varies with the square of the depth. If the floor is two inches deep, why, you usually figure four for its strength. If it's four inches deep, you usually figure sixteen for its strength. That's roughly a try to explain that. We had quite a problem there in making sure that the floor was adequate and that it could be finished with a wearing surface that would stay.

Oh, I was going to tell you about the band room. This band room [at Reno High] was to be in one end of the building. That's the gymnasium end of the building. And there were some classrooms fairly close; within fifty or sixty feet, there was the first classroom. And we wanted to design a band room which would not interfere with classes (and I'll tell you about [another] band room up here that did) and a band room at which the director could stand in a given spot and get the balance of his instruments much the same as they would be if he were in a big room. And we hired an acoustical expert for that. We put the band room on a platform which insulated it from the reinforced concrete floors and walls. And then we had a directional acoustical treatment so that the area where the director was to stand was going to get the right balance of instruments (this is way over my head). And the walls, instead of being flat, there were a series of curved surfaces so that sound reflected from those walls would be broken up and would not be reinforced by focusing. And that band room turned out to be very successful.

The other band room I'm thinking about was in the old Reno High School. They wanted

a band room, and I designed a band room in which I had all of the plaster on spring clips. The lath was put on spring clips and then plastered over that, so that the walls would kill sound. But they wouldn't let me take the windows out! So they got in there in the summertime and opened the windows and went to band practice. They might as well [laughing] have been right in the next room [laughing].

During that period, too, on the old Reno High School, I had to revamp their lobby with steel construction, take out the wooden construction that had existed, and the supports, and put a clear lobby in with steel construction, and yet do as little damage to the existing structure for repairs as possible.

One of the things that we ran into was the fact that the tile in the lavatories was a three-by-six white tile which was not made any more. And it was quite evident that if we broke out any of that tile, there'd be a very considerable cost in replacing tile because it would have to be replaced for the whole lavatory, and there were two of them. And they were big. And we had quite a job in getting these big steel columns down. Oh, they went down within an inch of the tile, and they were so long that they had to be jockeyed down. And we didn't break any of the tile [laughing].

The next high school we did was Wooster High School. And that was done as a campus high school, with covered walks. And the covers on the walks were used as the carriers for all of the piping and duct work between all buildings and the main building.

In addition to that, we experimented with a rocky surface, pebble surface, on the exterior of the building on the theory that it would never have to be painted, that it would wear indefinitely, and that it could not be scarified, or marked on. Well, it made an attractive

enough wall, and it certainly is durable, and you can't scar it, but you can sure take a gun and shoot a lot of black and green and blue ink all over it, which they did—couldn't stop them.

We had a gymnasium there with a built-in stage. And also there, we had a little theater which seats two hundred and fifty people, and it's been very useful.

fly the way, this brings me back to Reno High School. At the time we did Reno High School, there was a great outcry for an auditorium. And we designed an auditorium for the Reno High School which would seat 1,500 people, which was thought to be quite adequate at the time. And we took the design back to New York City, where my partner, who had been working for a large firm that did a great deal of theatrical work, had friends. And they took him to the Lunts, and the Lunts said, "If you build this theater in your high school, we will stop every show that we bring to the West Coast in Reno and put on a couple of performances because you have a stage which is sixty-five feet high (and it was 105 feet long). You can set a scene to roll on. You can set an original scene, lift it and drop another from above. You have adequate dressing rooms for any size company." And we had, also, in there, a broadcasting booth on one side so that the radio people could get in, and it could be used for all sorts of public functions. At the second story, where the balcony was, it had good walking spaces for outdoors, and that sort of thing.

Didn't have the money for it. And probably, it wouldn't have been adequate for too long, anyhow, at 1,500 people, you see. But it would have served the purpose for the ten years that we had been working with.

Getting back to Wooster, it very soon became evident that the Wooster gym wasn't large enough. We increased that in size. The

mechanics of teaching in a campus-type building were proven to be acceptable. I don't know of anything much—. That was a fairly smooth job.

And then we got the Hug school, and we made a campus job out of that. And that was rather difficult on account of the terrain. It is on a hillside. But there again, I think it has proven acceptable.

The libraries that we have provided, with the semicircular arrangement, have proven very good.

We've had our work with the City of Reno. We have done nothing much for—what'd I do for the city of Reno? Two or three small jobs.

Anyhow, we have recently done the legislative office building in Carson City, in which there are a number of innovations insofar as the routine usefulness provided and so far as the separation of the legislators from the public [are concerned]. In that building, the legislators will be able to go to their offices. There are offices—ten offices, I think—provided so that there are private offices when necessary. There are hearing rooms provided. And, of course, the legislative bureau is in there with all of the offices needed for its lawyers and research, and that sort of thing. As I say, all of these functions can be carried on without a legislator being collared in the hall by some constituent.

I believe that the voting is to be done by computer, so that when a bill is to be voted on, you press your vote “yes” or “no,” and this cannot be changed. This eliminates the thing of holding back until you find out which way the vote is going and making up your mind which way you're going to vote. You vote your convictions or your necessities or whatever the way you vote, and that's it. It will give the vote return correctly and quickly, too.

And we have good public address. We have good storage of pending bills and accessibility

to the legislators of all pending bills. I'm not too familiar with that. I really would like to have you sit down with Graham Erskine and let him give you a rundown of that building because it is the result of a whale of a lot of study and comparison with buildings that are being built for other legislatures.

And that goes also for the education building at the University of Nevada. This education building is for the education of teachers for this state. There's quite a bit of computerizing in there.

During the studies, Graham Erskine went back to Colorado someplace and studied the programming of computers in order that he might know something about what he was doing with them. Then he went to a seminar on the Coast of some two weeks, of thirty educators. He was the only “uneducated” man there [laughing]. They had two men from Great Britain and one from Canada, and what have you. They had an entirely different slant on teaching. One of the angles was that when you entered a course, you would be given a “true or false” examination on that course, a final examination. And if you could answer forty percent of the material, sixty percent of the material, or all of it, this determined how you would be approached by the teacher. People who did not need that course as part of the overall course they were taking would be promptly shifted, and there'd be no money spent on teaching them. This was being studied as a possibility for schools, that when you get bright students in and they need less instruction, you don't waste time giving them instruction. And, of course, there are just about as many people against it as there are for it. And this probably won't happen. But this is another reason that, with reference to these few things, I'd like to have you have a session with Graham.

Another thing that they came across was the fact that it was possible to throw an electromagnetic beam, which was like a wall, like this [gesture], and that that electromagnetic beam would stop sound. And another man, experimenting with a proposition to throw an electromagnetic or electro-something stop sign at cross sections from a machine, he'd throw it up there, and it would materialize as the word "stop" in the air. And he was successful in this. And they immediately said, "Well, if you can do this, then why can't you throw a beam across that would be the equivalent of a wall that you couldn't see through?" so if you had a beam winch would stop sound and you had a beam through which you could not see, you could take a great big room and you could make any setup of classrooms at any period that you wanted to. The only thing you'd have to be careful about is that when you got up and started to walk out of the room, you walk through these beams (they're not there; it's nothing), you don't run into something and knock them flat [laughing]. But these are interesting things that they're working with. Whether anything'll come of them or not, I don't know, Well, that's the schools.

[I must have done a lot of studying on my own of educational methods and the needs of teachers and students, and so forth?] Well, the studies of education, I did not take a course, and I did not read any large books on education. And the reason I didn't was that I could read one book and read another one, and they would nullify one another, negative one another. But in talking particularly with Earl Wooster, who, through the years, has been a good friend of mine—.

There was Earl Wooster, [and] there was another man from Winnemucca who had been president of their schools [who] came in here as an understudy of Earl Wooster's

who was extremely helpful. And it was through association with these people and with the heads of departments, the Carson City school people, and then with school people that we met in California—. we took trips to California and went through schools and listened to these men talk about their educational problems, about their maintenance problems, building problems, a terrific mass of material which was applied at the time for the job on which we were studying. The material is in a warehouse someplace now. But it's, of course, saved, the record of all those conversations and trips. But I don't keep it. I was more or less tailing off. I wasn't doing a lot of work at that time— that is, the physical work over the drawing board.

A couple of other jobs. I was associated with the original architects as their Reno representative and supervision was the First National Bank building and the Pioneer Theater building. These were very interesting jobs, and this was a new procedure to me, to be a supervisor without authority. I simply notified the architect of my feelings about any situation that arose and left it up to him to take the action. And it was most interesting. And it was also very pleasant, both of those associations. And for our work on the First National Bank, we were awarded a certificate of merit by the AIA chapter of Pasadena. This was where the principal architects were located. There's quite a lot of other work that I've done that I've thought about, and I don't know where in the heck it slipped to. There's hospitals I haven't covered. We built hospitals in Elko, in—. Oh, tie had a housing development, 125 houses in Herlong [which] I forgot to tell you about. We built a hospital in Hawthorne. We built a hospital in Carson, Elko, Carson, Reno—one other hospital someplace. In that connection, we found that the health department of the State of Nevada

was at one time very helpful. And then there came a change of authorities in which the man in charge of construction for the health department of the state was a man who had been our inspector on St. Mary's Hospital. He was not a doctor, he was not a hospital builder, he was not an architect; he was just another guy. He applied for the job on the basis of his experience at St. Mary's Hospital. That's all the experience he had, under us. And he was absolutely—we tried to get him fired, and the sister said, "Oh, we wouldn't do that." So we had to live with him. He became the administrator, and he did not like us, with the result that we had a lot of trouble with the federal—what they call it, Health, Education, and Welfare—people because of his reports. And we had to go to San Francisco and correct things that he said. We couldn't get approval of plans. They'd sit there for a month or so. He took all of the Hill-Burton funds and gave them to one outfit during one year, which, of course, slowed some stuff in Reno, too.

So this is another problem of the architect. When you're dealing with public authorities and committees and boards, if you could deal with the same board from start to finish of a job, this is one thing. But in any big job, your plans are apt to take anywhere from six months to a year. And in that six months to a year, you can find that some of the things that you specified and designed in the early portions of the job, particularly with respect to heating and ventilating equipment, have been discontinued—don't make them any more. There have been such tremendous changes in air conditioning during that period that this happened several times to us. The equipment that we'd specified was not made any more, and they weren't going to carry parts very long, either. So this required a change.

Now, a change in heating and ventilating equipment, this is interesting. One man's piece

of equipment may have an inlet at the bottom and an outlet on the side. And the other may have an inlet on the top and an outlet on the end. And you're trying to design a big fan room so that you can walk around in it. And great big ducts are going to be in certain places, and you can have corridors. And you suddenly have to change a piece of equipment, and your access and egress is covered with a big duct you have to put steps over, it makes quite [laughing] a lot of difference in the convenience of a facility.

The other day, I was driving around the town. I passed two jobs that I've done that were specialties and that I thought were excellent.

One was the Coca Cola bottling plant. And that is, I want to tell you a real specialty. Those bottles are washed, thousands of them at a time, washed and sterilized in a machine which is about ten feet square and forty feet long. They come out there in rows of sixteen bottles, and the sixteen bottles in one row and pushed out onto a conveyor that's just that wide. And they go on along here, and they come to a "magic eye" which rejects any bad bottles. For instance, if you just drop a pencil into one of those bottles as it goes by, and it comes to this magic eye, it'll pull it right out. If it's cracked, it'll pull it right out. If the top is rough. Pull it right out. Then it goes through a machine that fills it with exactly the right amount of liquid. And these syrups—there's just one syrup for all. They used to make their syrups by taking sugar and putting water with it. So now the syrups come in a tank and are pumped into a tank in the building. Those syrups then have a flavoring put with them, and they become orangeade, and they become Coca Cola, and they become this, that, and the other thing. So it goes through this filler, and then it goes through a topper, a machine that puts a top on them. And it goes onto a

packager at the end of the line, and when the twenty-four bottles are all shoved in the right places, they're dropped. And they go through twenty four slots and fall into a crate that has twenty four little squares. And that crate, then, is taken out on a conveyor belt, and the only time the stuff is touched, then, is when a man takes it off the crate and puts it on a dolly. As soon as the dolly is full, it turns right around and puts this stuff on a truck (and the truck's about thirty feet long; it's a big truck), it pulls out and delivers the bottles, delivers the drink right now, just that fast. By the way, we had to maintain temperatures in this building. And this was not easy because they wouldn't let us maintain temperatures in the warehouse. The warehouse was connected to the bottling plant. So in spite of any effect that the open warehouse might have on the bottling end of it, we had to maintain temperatures in the bottling end. [That required] a lot of study. And also we were dealing with a man who did not know the technical end of his work. He was the merchandiser and executive and all that and had become a millionaire with the business. But when it came down to the building and equipment, he had just depended on whoever he would hire as his engineer, and the engineers are competent—overall are competent—to fix a piece of equipment, and that's about all. So we did have quite a problem with these people. We asked a question of them and they'd say, "Sure," and then come back and say, "Never said it, never asked me that." Well, they didn't understand what they were asked, and they gave a quick just to get rid of it, thought, "Well, that guy's taking care of it anyhow." People have that attitude. And then the other one was a service facility for the Sierra Pacific power Company, well over a million dollars. We designed for them a circular building. And the roof overhung the entire circle by thirty feet so that they could

load their equipment with their shovels and their ropes and everything you can think of that they might need for a power break in the summer, in the winter, in storm or sleet—anything. But it was dry and ready to go. This got quite the write-up in the power company magazines. And I think it has proven to be a very acceptable facility. But it was, again, a specialty, particularly with respect to traffic, and day and night operation, twenty four hour operation. And then we had also to erect a facility for the repair of their trucks because if something broke down, they might need every one of them the next minute. It had to be repaired, and fast. So there were two interesting jobs that we have done.

The lawyers' building—this was for Bowen, Reed. And they didn't know exactly what they wanted. They wanted to build a building, and they wanted some lush offices, and they wanted a building that would pay for itself. So we did the building and they ran out of money, and they couldn't pay for an adequate air conditioning job, and the result was that the air conditioning job did not function as they thought it would in a lush office—or should in a lush office. And they were pretty mad. But we have it working now.

I built a microwave facility up on Peavine, which was also a very interesting job, particularity because of the weather, the extremes they have up there, and the fact that they did not need constant temperatures, and they did have to get rid of a great deal of condensation because they had a humid atmosphere inside the building, and sometimes, very cold and windy weather outside the building. This creates a lot of evaporation; the dew point is reached and water comes out that has to be cared for. Then across southern Nevada, we did a chain of microwave facilities, and they were, I think, on the order of thirty five to forty miles apart.

And these are actually relays. Your electric impulses, as they go through the air, they lose their power. They become a little weaker and a little weaker. So at certain specified distances where they're still complete and recognizable, they put in a relay which picks up the signal and amplifies it with additional power and then shoots it onto the next relay. This is almost instantaneous, that this increase in power is given to these things because electricity travels pretty fast. They were talking to me about a facility which was a pipe, underground, in which microwaves could be propagated, and there would—the microwaves are so infinitesimal. A microwave means [millions of] pulsations per second. Pulsation would be a rise to a maximum in one direction and a sink to a maximum in the other direction. And that's called a cycle.

Well, if you get, say, [a billion] of these in a pipe, you could send messages on a wavelength, and then you could separate that message from the next message by, we'll say, [4,000] cycles. And you could get a whole of a lot of messages going through this pipe, I think (more than) six hundred messages at one time. And if you were sending something to Kansas City on wavelength C, and Kansas City was tuned to wavelength C, why, this thing would go through the pipe 'till it hit Kansas City, and Kansas City'd pick it off. But nobody else would pick it off because they wouldn't be on that wavelength. I don't think this ever came to pass. But it was at a time when they wanted to bury their transmitting facilities so that bombs and that sort of thing couldn't interfere with them.

And they have also put a string of microwaves across northern Nevada. And they have strings of microwaves in north and the south, too, and a couple or three in the middle, which means that if, for some reason, a facility was ruined, as happened

in Nevada at Wendover, that you have other routes. You simply reroute those messages to another group or line of microwaves. So in wartime, in order to stop communications, somebody would have to get in here and bomb out quite a lot of facilities. And it's also quite possible that if they bombed out one microwave station, they might simply splice the cable and bypass it. And the signal would be of sufficient strength by the time it got to the next facility to be built up again. So that was their theory. Well, the result of that is now that a goodly proportion of long distance calls go over the air most of the way and go through these microwave facilities. And you have your dishes; they're parabolic dishes; they catch and focus these waves that come through the air. And they have directional facilities so that the waves don't spread out in a great big circle like a rock going into a pond.

Well, we did a couple of lines of those. We put one, for instance, on a mountain just out of Carson City. I can't think of the name of that mountain. Anyhow, they do have and we did do a number of those facilities.

Now, we did for the telephone company a facility on Center and First Street. And we designed those floors for one hundred and fifty pounds per square foot everywhere, including the roof. And in parts of the building where they were going to store batteries, which are very heavy, we designed this for two hundred and fifty pounds a square foot. And we had in the basement of this building electrical transmitting facilities, one cable of which might be worth \$100,000 an hour—that is, in tolls for the messages that could go back and forth over the number of wires in this cable.

And that had to be designed so that if the river flooded again that these would not be wet. They're in the basement. So we had to put a floor in the basement of this building that would stand the pressure of seventeen feet of

water. And seventeen feet of water is over a thousand pounds per square foot that would be pressing up. The walls, naturally, had to be watertight, and all joints between various parts of the building had to be waterproofed with copper dams and caulking, and that sort of thing.

Shortly after we finished it, the telephone company began to go to these little bits of transistors. They figured that they could put all of the facilities that they needed as of now, plus a good many years of increase in business, in this one facility that we had built by changing from the more bulky equipment of the day to the transistored equipment which was coming into use. It just went so fast that we put two more stories on that building. It is now four stories. And on top of that building, then, we had to put up a very heavy steel platform with the dishes to pick up transmissions from both Mt. Rose and Peavine.

The limitation in transmission, as of the present, has to do with the fact that the microwaves, the very small waves, as distinguished from radio waves, which are long waves—one, two, three, ten meters, and the microwaves may be a millionth of an inch. So you can (laughing) get a whale of a lot of material on a carrier wave, and a lot of messages when you get the proper equipment to start them on their way, and to pick the messages off. So there was that facility for the telephone company, and we also built for the telephone company a central office building out on Pueblo. And this was somewhat technical, too, because the telephone company has to be able to get out and in the country real fast from time to time.

The most delicate thing with work for the telephone company, when you're working around their transmitting apparatuses, are

these cables. And if you should damage one of them so that it could not be used for three or four days, a tremendous amount of money would go down the drain, as far as the telephone company is concerned. So they have their cables under water across the oceans, and they have their microwave transmission over the continents, and they also have the satellites. And these remarkable things now are giving us television from Europe.

Things travel so fast. The developments have been so speedy in all lines of work, and particularly in our experience with the telephone work. We had, on this same facility, on Center Street and First Street—Lake Street and First Street, it is. The Center Street and First Street was the original building, and we put the building on Center and Lake, which took the rest of the block. The heating apparatus for our new facility had a smokestack at approximately the roof—on the first unit we built of the original building. And it was a very efficient plant. There was very little smoke showing when the plant started up. But the air conditioning equipment in the original building on Center Street was pulling in air at such a rate that bits of smoke and soot from our building were being drawn in. And those little bits of soot, coming down on this apparatus, which is very delicate, began to interfere with their transmission, with the result we had to put up forty feet more of smokestack. in order to keep this building from drawing the smoke from our building in.

Another thing about that new building—when they set up the test for the air conditioning, it started pulling in gnats. Well, the intake on this Lake Street building for air conditioning was, I should say, six feet wide and twelve feet high. And it had filters and screens—everything you could think of. No bird could get through it. No bug could get

through it. No mosquito could get through it. Everything's just fine.

These gnats swarm at about the height of that intake when they're—I guess they're in season at certain times of the year [laughing]—I don't know. And by golly, they just went through that little screen! And they got into the duct work, and then the duct work, where one duct came against the other duct, and they had to flange, and then you riveted the flange, and this was the thing up here, down here [gestures], and then this little two flanges down, you riveted them. The men who serviced the air conditioners got in these ducts and walked in them. They were big ducts, such that men—. And as they walked on the sheet metal, it sagged; it would begin to sag a little bit between the rivets. And that very small space, the bugs went through, the gnats. The result was that we got a call from one of the executives of the company who had an office in the basement. He was quite profane because when he came to work in the morning, the whole top of his desk was covered with gnats [laughing]! And we had quite a time eliminating that. We had to make everything almost watertight in order to eliminate those gnats.

Well, that's a different type of facility. Our schools— oh, there's one I wanted to tell you about the schools. Hug High School. When we took bids on Hug High School, and the price of the high school, the bid price of the high school was in the neighborhood of four million dollars, we got two bids, exactly alike to the penny. These bids were prepared separately without any collusion—one man from Las Vegas and one man from Reno. And when the bids were opened, two of them were exactly alike to the penny. Nobody knows of this having happened in the state of Nevada, although somebody said he knew it happened someplace else

once. Mid as a matter of fact, two or three fellows have suddenly remembered that this happened—\$9,461,000.19 [laughing].

But anyhow, the problem that arose, then, was who is going to get the job? And the man from Las Vegas hired a lawyer and an engineer, and he made some claims that the specifications for the excavation and grading were not specific enough, and that had he bid the job the way his competitor bid the job, he would have been low. And then he had a couple of other angles that he cooked up out of the back of his head someplace. And they had a big meeting of the high school board and their lawyers, and everybody in the country was there.

So they let this man present his case. We, as the architects for the board, were also of the opinion that if it was a tie, the local man up here was the man to get it because he had the advantage of being local. He had the advantage that most of his subcontractors were local and could get on the job faster. And we felt this was a reasonable attitude. And on the other hand, a reasonable attitude has to do with if you build a school in Washoe County, Washoe County people ought to do the work. That's what the building industry thinks, too. And a failure to have given that job to the local contractor would have created all kinds of political byplay.

So in spite of the fact that we had a hearing, this local man was going to get the job. So as soon as all the presentations had been made, somebody on the school board moved that the job be given to the local man, and it was seconded and voted, and they said, "Good-bye, sir."

And then this contractor who had raised Cain came to me, and he said, "I think that was fair enough." He said, "Maybe I shouldn't've protested. But I was disappointed and pretty mad, and," he said, "I had to do something"

[laughing]. So he created quite a bit of trouble. Well, that's another job.

It's funny that I don't think of these jobs except maybe at night when I'm lyin' in bed. I think, "I should've told about that," because we have a lot of jobs all over the state. And they have come and gone and been forgotten. I'll tell you one thing that makes you forget a job. At the end of ten years, you button up a whole gob of drawings and specifications and what have you and put them in the dump. And when you do that, you also dismiss the job. There's nothing more you can do about it. Twenty-five years after I did the El Cortez, they called me up and asked me for the drawings so they could make some improvements in remodeling in the El Cortez. Well, those drawings had been thrown away. You can't keep those drawings around. They get bigger and bigger. I was in the Oakland building department one time, and we went in to find a drawing of a big building. We had a code question coming up. And they had a whole floor, floor to ceiling, stuffed with paper. They couldn't find anything! They didn't have it properly indexed. People had come, looked at something, and put it back in the wrong place over the years, and it had become a mess. And the result was it cost them nearly \$30,000 to take these plans and look them over and throw away those that they could dispense with and to adopt a policy of destroying plans after a certain time, except in large buildings, and that sort of thing; they kept those.

I would like to talk about how it is to work with the state planning board.] The state planning board, when it was organized, had a secretary-manager who was not an architect; he probably was an engineer. I don't think his education was complete. My partner got at odds with him, called him stupid, one thing and another, and raised such Cain that it was trouble for the planning board to give us a job.

About that time, too, we had been given the job of the Student Union. The then president of the University was a very [laughing] —don't want to say—he was very positive that he knew everything about everything, and he demanded—very demanding—that certain things be done with the Student Union. And this job, Graham was handling. I didn't get into it until the later stages, and then I distrusted the job as being too expensive. Well, it not only was too expensive, it was double the amount of money that was available. And there was an immediate thought about suing us for delay in the building and that we had to change the plans and get it down to fit the budget. And they then at that time had a man in charge of construction for the University, a buildings and grounds manager, who was also rather arbitrary. He had quite a time getting that job cut down to the point where they could build it. The result was they only had a piece of a facility, which, of course, brought on severe criticism, too.

The upshot of that was that we were too troublesome to do work for the planning board and that they would prefer to do work with other architecture firms that perhaps weren't as well qualified as we were because they would be pleasanter to do work with. And this is a proper attitude, too. So, the next job they gave us was an addition to the Student Union, and we got it because we had the drawings of the original and were familiar with the original. They weren't too happy about giving it to us then, and trouble developed between my partner and the Board of Regents and the then secretary of the board. So the Board, as it's presently constituted, with its present secretary (I think he was there at the time), laid out a ten- or fifteen-year construction program for the University. And they gave us the Education building we're

doing today, which was the fortieth project on the list, and was expected not to come up for ten or fifteen years, which eliminated us very happily from raising any more Cain.

Well, the time is up. The job came up, and immediately, the University called in two other architects to talk about the job. We didn't even know they were considering it. But the then planning board chairman (I guess he still is), Bert Fitz, said, "He gave this job to Ferris and Erskine, and they're going to do it. It's their job."

So we have about—I think we have completed the plans and specifications for the job. And I think that Graham Erskine, my partner, has learned a pretty good lesson over the years. I think he has done an excellent job. And I think that they like the job he's done and the contacts they've had with him. And if they do, he may qualify for some of the future work with the state planning board. They have large sums of money to spend for this state. However, when it became necessary to appoint some architects to compete for a new \$6,000,000 gymnasium, Mr. Erskine was not mentioned. So there probably is some residue.

Now, the state planning board are very happy with the legislative building in Carson. I don't know what the reaction of the Carson people will be. It's a plain building. It had to be plain, if you were going to get it for the money that was available. We had the state planning board to satisfy, we had the legislative building committee, or whatever they were called, to satisfy, and we had to meet the budget, or else. In meeting the budget, we had to take a base bid on a portion of the building that we felt would really meet the budget. When we had alternate bids, additive bids, that if we were to add this section to the building, so much additional money. If we were to include full air conditioning, so much additional money.

If we were to include all elevators, so much addition, so on.

Well, the result was, of course, that we were able to get a contract let for that building for the amount of money. You must let a contract for the amount of money budgeted by a governmental agency. You cannot let it for one cent more. And this, I don't understand. If it was one cent more, they would require that you change the plans and take a new bid, costing a lot of money to the contractors and to the state. But that is the law, and perhaps it's a good one. It certainly protects the people from a lot of graft that sometimes goes on—not in this state necessarily, but in the industry.

That building just [recently] was dedicated; that is, the cornerstone was laid. And it will be finished, I think, sometime in the fall. And that's going to be practically a two-year job in finishing it. Many interesting things came up in that building, but you will have a talk with Graham Erskine, and he'll give you some, I think—a most interesting account of both that building and the Education building. They're both very complicated, very interesting jobs. He lives with the jobs. He works night and day. He's a hard working man. If he just had the personality, he'd be the leading architect in this area, believe me; he'd be doing work in other states, too.

At the time they built the J. C. Penney building (that's on the corner of First and Sierra), there was coming into the picture, construction picture, tilt-up slabs. In other words, you'd pour slabs on the ground, let them harden, and then haul them up and put them in place and put in a whole section of wall without form work or anything in a very short time. Also, there was coming into gradual acceptance what they called a flat slab floor, which is a slab that just sets down on top of a column. It doesn't have beams this

way and this way [gesturing] to support it. It's supported just on the top of the column. And it has to have the type and kind of reinforcing that will take care of the stresses and strains in a circular area around that column 'till the next column picks up and takes over.

Well, the J. C. Penney Company was designed that way, and very shortly after they put in their fixtures, they found that their fixtures were sloping. They weren't level any more, and there were cracks underneath the fixture between the fixture and the floor. So I received a call to go and see if the floor was safe. Well, what happens is—almost completely technical. I don't know whether I can explain it or not. When you have a beam carrying a load, you put steel in the bottom of the beam because the beam tends to sag like that [gesturing], and naturally, this is a tensile pull. You can see it when you [bend] your hands, how it pulls the skin. So you put steel down there, because masonry has no tensile strength. And in the top of the beam, the masonry itself has great compressive strength, and you can see, also, that if you bend something, this is shortened. And in shortening, it puts a lot of compressive force into the material. Since this is flexible, no force there, but in flexible material, it puts a lot of compression in. So that is the beam and column system. Now, with the floor system, flat slab, you have that same beam and column until the floor begins to sag a little bit.

Now, everything that you build moves. Steel moves, concrete moves, everything moves with changes of temperature and contraction and expansion, and all that sort of thing. So in setting, the concrete shrinks a little bit. And the tendency is for the floor to sag a little bit. And this sag comes from load, too. When you load a floor, it sags. Any floor that you put even a pound on sags. You can't tell the sag, but it will sag. It sags and bends.

Well, the thin floor in a long span can sag quite a lot, having only a very slight effect on each of the beams, whereas a big one that sags a lot has a big effect on the top. And as it has this sagging effect and the compression comes in the top and the tensile in the bottom, pretty soon the tensile strength in the bottom is taking practically all of the load. In other words, it becomes a string, like the cables of one of these bridges, of the Golden Gate Bridge, for instance. That cable sags down. That bridge moves as much as nineteen feet in high windstorm. and in hot weather and cold weather, and what have you.

Another little explanation of that same thing was that when they built the Bay bridge, they became quite exercised because the platform on which they were going to build the rails for the trolley cars that were going across there was about six feet too high. And then they finally decided, "Well, we haven't put the weight of the rails and the roadbed on it. And when we do, it'll come down." Well, six feet in a three or four thousand-foot span is almost nothing, whereas six feet in a ten-foot span would break everything up and put it back into gravel and sand [laughing],

So what happens with these flat slab floors is that they become supported by a string of steel, now, the question is, is that steel strong enough, without the assistance of the concrete above, to hold the load? Well, this floor had sagged three and a half inches in twenty-some feet. So we simply took an instrument in there, took the worst bay. We'll say that the columns are twenty-five feet on center, so it'd be a square of twenty-five feet. And we strung copper wires very tightly in a grid, back and forth, with little squares. Then we loaded that floor with double the load that it was supposed to have by putting cement sacks on it, double the load required

for design by the code, which is .a hundred pounds a square foot on it. And then, because we have this leveled grid of copper wires, we can measure down every two feet and see what has happened to the floor after it was loaded. We measure down and see where it is before we load it, and then we measure and see what happened after we load it. The floor didn't move particularly. So the floor was perfectly safe structurally, but an awful thing to lay nice, straight cabinets on. And so we had to say the floor was safe. I don't know what they finally did with it.

Those are some of the little things that come along in an architect's life, and they're very interesting as you're working on them. And your engineers, of course—this engineer was from San Francisco, and his reputation was at stake, and he was very much involved in these tests. He was right there to try and see that everything was done the right way, and that the right results were written up, and that he was cleared absolutely. Well, he was cleared.

I did a job that I thought was very interesting. Now, maybe I should cover this—well, I'm going to cover it right now. I did for Harold's Club a seven-story addition, which was only twenty-five feet wide. Seven stories high, and it was oriented at right angles to the prevailing winds so that it got the full effect of our stronger winds, tending to turn it over. Well, about the middle of the design period, Harold's Club wanted to increase the size of the top three stories. They said, "We want to overhang ten feet to the north."

Well, we said, "We have the wind coming from the other side trying to tip this thing over. Now you want to put three stories of heavy concrete construction on the north side, which will tend, again, to tip it over." And it makes quite a serious construction problem. I said, "You can work it out."

Our engineer at the time was Hal Engle of Santa Rosa, a man who had been a fee man—had been a salaried man and later a fee man for the Board of Underwriters of the Pacific with respect to earthquakes and earthquake-resistant structures. And he was able to design this building to resist earthquakes as the code required. The code does not say you can make earthquake-proof buildings, but it says you can make a building earthquake-resistant with respect to the experience of this area in earthquakes so that damage will not be extensive. He designed these footings so that this building was safe.

And this building became a conversation piece among earthquake engineers all over the United States. And at their convention in Seattle, this was one of the buildings which was discussed in detail. They were all interested in the design of the building in order to do this thing—with your prevailing winds here and your overhang here tending to tip a building which is seven stories high and only twenty-five feet wide! Of course, we haven't had an earthquake since it was built, so we don't know [laughing]. We do know that the building, being alongside the old Harold's Club building, has never settled the slightest bit. The floors are still equally high, and so forth, and it's, so far, been a successful piece of construction.

In this regard, there was an interesting incident in Los Angeles during one of their earthquakes. A new hotel had been built down there, and it had been designed to resist just about anything in the way of an earthquake that could take place. But all of the elements of resistance were of structural steel. Then they put masonry on the structural steel supports and on the interior. I believe they had gypsum block walls; it was fireproof; it was just about everything you can think of as far as being a safe building.

Along came an earthquake, and it just cracked those plaster walls and those partitions all over the place. And it was discovered then in an investigation why this happened, that when you do a steel building which could be absolutely safe as far as collapse—as far as actual change in size—it will rattle back and forth, all right, because steel is a fairly elastic and ductile material. There's a lot of give to it. You, yourself, know how spring steel is made, and that sort of thing. But masonry is not. So while the building moved back and forth with this earthquake in its steel structures, all it did to the masonry structures was crack them. And half a million dollars was the cost of putting it back in shape, which now has led to the establishment of many joints in masonry work so that there isn't a great, long, continuous structure of masonry which can be changed to the point where it cracks. But there're a series of smaller expansions of masonry that can give at those joints as they move and not crack anyplace. Well, this isn't perfect, but it's a lot better than we did have.

[I was going to tell about some of the things I did in giving expert testimony.] Well, expert testimony, as such, was largely a question of getting on the stand and the lawyer would start to qualify you as an expert. And the judge would say, "Hell, I know him," and that was that; you're qualified. I remember this Nevada State Life Insurance Company used to own the building on the corner of Second and Center, which is now only three stories tall, called the Professional Building, or something. It was five stories then. It was an Odd Fellows lodge building. And it had an elevator in there, which was one of the early elevators. They didn't have safety doors, and all that sort of thing on it—no doors at all on it, as a matter of fact. Anyhow, this mailman was delivering mail up and down. But he rode in the elevator. Bad without the doors,

of course, the ledges at the floor stuck out a little further than the elevator shaft, not much, but a little. And as the elevator went up, he has his foot hanging over that edge carelessly, and the elevator cut it—came up to the floor, and it cut his foot off, across, like that [across the instep]. And he was a man about seventy or so years of age, and as a result, he died.

So the Nevada State Life Insurance Company was sued for, I think, \$16,000 or \$15,900, something of the sort. And Buddy Longnecker, who was in charge of Nevada state Life at the time (I guess he was—he might've owned it; anyhow, he was the manager. He was the president, is what he was), he hired me as an expert witness. So I made a drawing of the entire shaft, with all the doors and everything, and that, of course, was up on a board. And we came to court. And Summerfield, the old man, Sardis Summerfield, was the attorney. And he wanted to talk about the door where the accident happened. I had a large scale of the door, like the door's so high and so wide on a drawing, you know, with every little detail—even defects in the woodwork show. For three days, we talked about that door—morning and afternoon. He was trying—and I'd been trying to think about what he wanted me to say. I knew the point he wanted to make. And I can't think of it now. But I wasn't going to make it for him. And there we sat. He was determined that I should say some certain thing, which I don't recollect now. And from every angle of approach he could think of, from every silly question he could conjure up, he tried to make me say that thing, and for three days I didn't say it. And he finally let me off the stand, and as I walked by his table, why, he said to his pal who'd been sitting alongside him all this time, "The hell with him [laughing]!" After three days. He was sure going to make me say—. He was

a determined, stubborn man. Now, wait a minute! He was [laughing]!

What else was I on the stand about? I've been on the stand so many times. The last time was in Judge [Grant Bowen]— he's running for election now, plays golf all the time. I was in his court. And the lawyer was [George] Vargas' partner. And I was qualified, as usual. And then they talked about our pinochle game. The lawyer said, "I play lots of pinochle with him, and he's not very honest there, but I expect him to be honest on the stand!"

That's the sort of thing in these courts— in the old days in these courts, it was conversational more than anything. I suppose there were times when they really went to town with the rhetoric. But in the cases that I have been on, it was largely a conversational thing. I was not questioned as if I really remembered what I was saying. Or if I wanted to think about that again and do it over, they ask me a question, I gave them an answer, and that was that. And pretty soon, I was all through, and then I had left.

Well, I've been trying to think of what I have been in court about. I've been in court about condemnations. I've been in court for some—never in a libel suit. [I've] been in court for damage suits, a couple or three of them. I guess I haven't been in court too much. But the court out in Austin, when this—who the heck was the district attorney in Austin? He was in here as a judge for a long time, an Italian, [A. J. Maestretti]. His daughter was a fine pianist.

Well, I'll tell you a little story about him [laughing]. I was fifteen minutes late for jury Duty. And he stood me up in front of the court and everybody and just ate me up but good. And I was plenty mad, but I was also a little cagey. Maestretti, big, fat, wide. I knew him out in Austin so well. And I built the high school out there. He was district

attorney, and he entertained me, and we liked one another. But for some reason, he decided to make an example of me in this jury duty thing.

Well, he lived cut on Lander Street [Reno], and I got a call one day (I guess it was from an installer of these space heaters), that at such and such an address, they had connected two space heaters into one chimney, which is against the law. And you're not supposed to connect anything to a chimney without having an inspection by the city building department anyhow. So I went out here, and it was Maestretti's home. I knocked on the door. He was there. I went in and I said, "I came out to have a look at your chimney."

Says, "Sure. Got two of 'em. Which one you want to look at?"

And I see the space heater. I said, "This one here."

And I found that there were two space heaters hooked into the chimney. So I said to the judge, "Now, this is a misdemeanor."

"What's a misdemeanor?! [Don't] tell me what a misdemeanor is. I know the law!"

I said, "You have hooked two space heaters into this chimney, and I'm going to have to issue a complaint."

Well, he hit the ceiling. And when he got through, I hit the ceiling for him. And I really bawled him out for going ahead and doing work without asking for a permit to do it and without having inspection for it when he, as he just told me, "Knew the law." He must have done this with malice aforethought, and he certainly was guilty of breaking the law, and da-de-da.

Well, when I got all through, [laughing] I was about to leave, the judge says, "Monk."

[Laughing] And I looked around and said, "What?"

He said, "We even?" [Laughing] Oh, brother!

I think you'll have to pass the expert witness thing because, as I told you, in my day, I was an expert witness by general acceptance, not because I was particularly expert or had had a whale of a lot of experience. But I was one of the few guys around in my business, so I was an expert. And I was treated with respect; I was practically never badgered. [George] Vargas is the only guy that ever tried to badger me, and he didn't try very hard. I've forgotten what I said to him, something that the judge could have slapped my wrist for. But in any case, he grinned, and that was all there was to it. But I have never been subjected in court to yelling and badgering. This Summerfield, he was just as calm at the end of three days as he had been in the beginning, same tone of voice, and so forth. And I think he could lull you to sleep unless you were a little bit hot about the whole thing. That sort of thing gets you a little bit madder every ten minutes. Never quit, never quit—just like the Chinese torture with the drops on your head.

Alongside the Nimitz highway in Oakland about five years ago or six years ago, I built a bakery for the Fitzpatrick Baking Company. And it was my first view of a modern bakery. This setup is one of seventy-odd bakeries that are owned by a holding company in Texas. These bakeries are worth an average of ten to twelve million dollars apiece. This means, largely, the machinery; the building is a minor part of the cost. It's the machinery that goes in these buildings that is the costly element. These people, the owners (financiers is what they are; they own the bulk of the stock; they don't own all of it), they set the program for each bakery in each area. And, of course, they make the studies of the population and of the competition. If, for instance, it became necessary to meet cut prices from some competing bakery, they can drop the prices of any one of their bakeries below any

price that any competitor can make because they're going to split that difference between seventy-odd bakeries. It's a small difference, really, and it doesn't hurt any of the bakeries. So the fellow that's in trouble gets a lot of help from all over the United States. It's rather rough on the people, for instance, in this particular bakery. The San Jose bakeries and the Fresno and Stockton bakeries got together and came up to cut in on the San Francisco business with cut prices. And this boy just simply undercut them, and in a matter of two or three months, the whole thing was all over. The prices were back up again [laughing].

But going back to this bakery, the flour that goes into the breads and confections is delivered in bulk in tanks. And it's dumped into a great, large tank, which, of course, is completely waterproof, protected from moisture of all kinds, and that sort of thing. And the flour is blown by air from there into the mix through pipes. It's blown first, of course, onto a container on a scales so that exactly the right weight of flour [He deposited]. And there's an allowance for the weight of the air that may have come in, extra. This is, I suppose, on the order of a tenth of a percent. The shortening, which was usually a solid (at least, it was a gelatinous substance) is now all liquid, and it's pumped into the mix, by weight, of course. And this mix is dumped into huge mixers that hold 1,500 pounds of dough at a time. They're about fifteen feet high, or more. And they take this 1,500 pounds of stuff, and their big arms go around and mix it, and I[mean] really mix it. Then a tub, which is about ten feet long and, we'll say, two feet six wide and around four feet deep is on an elevator arrangement alongside this mixer. And the elevator takes it to the right spot and the mixer dumps this 1,500 pounds of dough into this tub. And it fills the tub about halfway, or less. The tub is

then put under a cover, and I don't understand just what goes on underneath there, I didn't mention the yeast has also been put into this mix. In four hours, this tub is not half full. It is completely filled. The dough has risen, and it's completely full.

Now, this immediately goes to another mixer, and this dough is the basis of bread. Now, you can put flavoring in it; you can put raisins in it; you can vary it in various ways. And, of course, you can also have different kinds of flours. But at one time, the flour in the tank must be used up. And it comes out of this machine and is cut off in chunks, I should say about like a four-inch cube—yeah, about like a four-inch cube, and it comes onto a rotating wheel, a flat wheel, that's slightly sloped. And it runs around that several times and becomes a ball. And as it becomes a ball, it is sliding down this—because the wheel is sloped to the edge, it's sliding down it. And finally, it comes out onto a conveyor belt. This conveyor belt takes it through another—it's not an oven, doesn't heat; there's no heat in it, I don't think. Something happens to this dough there which has to do with the kind of bread you're going to make, or sometimes you make stuff that are twisted, and it will come out in a long, small, round place. And men, by hand, then, give it two twists. Or it'll come out as just this circular thing, and it is deposited in pans the size of a bread loaf, one in each pan. And those pans are in bunches of ten. And the minute ten pans are filled with this dough, they're shoved into an oven, and ten more pans come along on the belt.

This oven is ninety feet long, and it has two passes. You go this way [gesturing to the left], and you raise up and you come back ninety feet. So it's a hundred and eighty feet of travel, and it takes about an hour to go through the oven.

When the bread comes out, it is cooked. It is completely baked. But it's very hot. So it goes onto another belt, and at this point—this is one of the few points at which human hands touch this bread. One, the first point, is in case you have the twisted dough, there are men who stand there and give it a couple of twists. At this other point, when the pans come out of the oven and fall onto the belt, sometimes the pan turns over on its side, doesn't sit on its bottom. In that case, there's a man who just rights it, and that's all he does.

Now, these pans go into a tower, which, I'll say, is twenty feet square and perhaps thirty feet high. The conveyor belt goes around it in a sort of a circle. When it comes out of that tower, it has been then cooled down to one hundred degrees or less. And the reason for cooling it is that you can't slice the hot bread. But at a hundred degrees or less, they can slice. And it runs through a slicer, which just does this [slicing gesture], and it's cut; one pass, and it's cut into any number of slices of bread.

From there, it goes along (within just a few feet) to a wrapper. And it is completely wrapped by a machine. If it should happen to be that you're cooking buns, they come out in batches of four. And when they come to this wrapper, it is then set up with bags. And a bag is put in place, and compressed air is blown into the bag so that it's just wide open. And a woman stands there, and she shoves four of these inside the bag. The bag is immediately run into some kind of a thing; it's twisted a couple or three times, and it's all wrapped and ready to go.

Well, these things go into pans that are, I should say, two loaves wide and, say, five loaves long, ten loaves to a pan. And those go out on this conveyor belt to the garage. And in the garage, they have dollies that have perhaps a dozen shelves. A dolly is just a four-wheel thing that can hold any kind of

material and be pushed around. And this one can hold about fifty pans of bread. And it'll weigh a thousand pounds loaded. And they shove this into the truck.

Now the truck is backed up against the bakery, against a soft foam rubber gasket, which is about eighteen inches square and goes all the way around the truck, so that when the truck backs up, its edge, its sides and bottom and top, are all jammed into this foam rubber gasket. The doors are open, and the temperature of the truck, which is then not been necessarily at seventy-five degrees (which is the temperature at the bakery at all times)—. The temperature is seventy-five degrees in the bakery, the humidity just so, and everything is controlled. Not even a sharp corner is in a bakery, and certainly, no little pockets of any kind where flour or dust or anything else could rest. There are no corners where things can set. Well, it gets into this truck, and when the truck is finally loaded, it takes off for wherever they're selling bread. They have about a thirty-mile radius for a bakery, sixty-mile diameter they cover. And they deliver this bread to the outlet, the retail outlet.

The next day, when they come down, they'll have another load of bread. And they pick up all of the bread that wasn't sold the day before, put it in the truck, and take it back to the bakery, where they maintain a stale bread store. And that stale bread is sold at a cheaper price, and many people buy the stale bread. It's not really stale; it's perfectly edible bread. It's soft in every way. But, nevertheless, they sell it, and one of the reasons they sell it, I'm sure, is because it's a very profitable venture and because it is much better to keep making a lot of bread and putting in the retail outlets and selling in stale bread stores what's left than it'd be to cut down their production. This is an additional outlet. And this stale

bread outlet goes to farmers who want to feed pigs and chickens. They can buy a truckload of this bread. And, of course, people buy the bread, too, at these cut rate prices, and this is one of the very profitable departments of the bakery.

Of course, the—the health department is looking down their nose every minute. Everything you do is subject to inspection. For instance, the floor in this bakery. These trucks, dollies, we call them, with steel wheels, are about ten feet long, and they're, I think, two loaves wide. They're a good eight feet high. And they weigh, loaded, up to a thousand pounds. So they push those along on the floor for various reasons and from place to place, and what have you. And a concrete floor will be cut to pieces in the matter of a couple of years by the steel wheels. So they put down a brick floor, exceedingly hard, baked brick, made only in one place in the United States, and put down only by crews from the manufacturer. That floor will go into every bakery that is built until such time as they are able to retire the dollies with steel wheels. They've got a heck of a lot of them and a lot of money invested, and they're going to use them 'till they're no good. As soon as they retire them, they're going to rubber wheels, and then they'll have cheaper floors.

[Laughing] You run into so many of these little items. The business of selling bread—a bakery has always been just a place where you baked bread, as far as I was concerned. But these bakeries are automated to the nth degree, and they are absolutely sanitary. They have curing rooms for bread.

Oh, I think I overlooked one spot! I think these batches of dough go into a room for twenty-four hours with a certain temperature before they come out and set down here and raise up so much. Maybe they raise up in there. I'd forgotten that very little thing.

But they make buns, and they make bread, and they can make raisin bread. I don't think that this bakery makes whole wheat [bread], but I couldn't be sure about that. I think they can do anything they want to do in any amount that they want to do, and I've forgotten how many hundred thousand loaves they can turn out in a day, two or three hundred thousand loaves of bread in one day, all done without, almost, human hands touching it, done in a building that is kept at constant temperature, constant humidity. They've created a climate for it. The bakery oven is completely controlled, foot by foot, almost, of its length, that its temperature is right. And the temperature is less when they're coming back in the top of the oven, or more; I don't know which. The temperature's different coming back in the top of the oven than it is in the bottom of the oven.

So there are a lot of angles to this, and these people in Texas are in control of every step in the design and in the construction of this bakery. If the market changes materially in some way, even in building materials, you may change your building material a bit. We used concrete tilt-up for this bakery in Oakland, and we covered it with pebbles like the high school, the Wooster High School, so it'd look a little better.

In addition to the bakery itself, you have two rather large buildings for the washing and sterilizing of trucks. Your truck goes in and it's steamed at high pressure with compressed air—everything you can think of done to that truck. They have a paint shop; they keep them painted. And then they have a rather large repair shop because they have two hundred and fifty—or did have—two hundred and fifty of these big bakery trucks besides all of their other rolling stock, automobiles and that sort of thing. You can see the amount of money that's involved and the tremendous scope

of the operation, the variety of things that must be done, done by experts and done on schedule. I thought that was (one of] the most interesting jobs I've had. Of course, Coca Cola was another very interesting job, but that was a rather small deal compared to the bakery.

These are some of the things that make architecture so interesting in a small town. In the big cities, architects almost have to specialize in some line of work, and they become experts in the operation and in the financing and the marketing and the materials, and everything you can think of, and they also have a big enough volume of that work to keep their offices busy. Some of the big offices have several departments expert in various things that come up in their area. But the architect in a small town has a chance to get into almost everything that is done in his town, one way or another—most interesting.



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## NEVADA STATE BOARD OF ARCHITECTURE

Well, 1947, the legislature decided that architects and engineers should be registered. I don't know whether the engineers started then or not. But anyhow, right in that area of time, both of these registration boards were set up, and I became the chairman of the first registration board. And as such, my license was issued as No. 1 in the state of Nevada, first man to be licensed. The other people on the board, five of them, got [No.] 2, 3, 4, and 5, and my partner got 6 [laughing].

We had a man named Perkins from Oklahoma, who was at that time the secretary of the NCARB: this was just shortly after it was organized. He had a very small office in his home, and he didn't have too much money, but when any state wanted to find out about NCARB and to license its board members [he administered the tests]. We took our examinations at that time, when he was in Tonopah (we did this in Tonopah, Nevada), and we took our examinations and we were all licensed. When I say we took our examinations and were licensed, why, this was a pretty sketchy little ol' deal. We didn't submit

anybody's recommendations or anything else. We just said, "Yeah, we're architects, and this is a building I built. You can see for yourself I'm good," and Perkins says, "Of course, you are, and you're licensed" [laughing].

It's not licensed, by the way; it's registered. Licensing and registration are different. In Nevada, we are registered by the state as architects and permitted to practice anywhere. But if we practice in Reno, we have to take out a business license. And Reno just bears down on this business. They want a percentage of your total cost of buildings. And that's the way we get paid, only six percent, seven percent, eight percent, maybe. And if Reno suddenly wants a half percent, why, they've taken fifteen or twenty percent of our income. So that got to be a little bit onerous for a while. That's the difference between licensing and registration.

Well, we began our operations, and architects gradually realized that they had to be licensed in the state of Nevada. Architects were doing work in Las Vegas, just walk in and do the job. Most of the jobs that were done in Las Vegas originated someplace else,

mostly in Los Angeles and in Glendale at lower southern California. Those architects all moved in, and they [were] working very happily without a license. Utah was coming into Elko, Utah architects, unlicensed. All over the eastern side of Nevada, Utah architects were doing the work.

So we had quite a little chore to get the architects to understand that if they did work in the state of Nevada, they were going to be arrested. This became a misdemeanor. And gradually, it became known that Nevada, as with the rest of the states who—, At the same time, I might say, most of the Western states were beginning to require registration, rather strictly require registration, look into each job that vent and allowed no one to do work without registration. It had been pretty sketchy before. If nobody complained, why, you came in and did the work and left the state. So we began, then, to get a great many architects coming into the state. I'd say that it's five to one architects outside the state register to do business in Nevada against Nevada architects themselves.

So as I say, we began to get so many of these architects coming in, and they came in with all sorts of stories and all sorts of submissions that they were competent, and as I told you a minute ago, the other states were just beginning to pick this up, outside of California. California had a good registration board. And the material that came in was pretty sketchy. And we were looking down each architect's throat, which was a big job!

We had [Frank] Lloyd Wright's brother come in for a license. He was working in southern California, and he brought a big roll of drawings under his arm. He brought in the darnedest bunch of stuff, and he said that he had been trained by Frank Lloyd Wright in his place that—I never can think of the name of that place, in Arizona. And we refused him

a license. He didn't have the qualifications we required, and he was going to sue us and just raise Cain. But he went back to Los Angeles, and I don't know what he did. I think he went to school for a little while. Anyhow, he got some credentials that were semi-acceptable. And we were taking semi-acceptance at that time because we didn't even have an attorney working for the board.

Rut as these registrations increased in number, we began to get some money. And with the money, then, we were able to hire an attorney, a board attorney, and to have separate audits of our receipts each year by our own private auditor, not by the state. And then, all of a sudden, the state decided you had to have budgets. So suddenly, it was necessary that in order to operate, we had to have a budget. Well, we made out a budget, and the result of that was that we included quite a bit of money that we didn't spend, because we didn't know— for instance, I wouldn't know whether our next meeting was going to be in Hawaii and we were going to send five members of the board to Hawaii and back, and pay all their expenses. Well, this could be something between \$2,- and \$3,000 of expense that might or might not happen, depending. If the next meeting was held in San Francisco, it'd be nothing. The fellows from Las Vegas wouldn't want to go, and the three of us from up here would probably go. So, there was quite a bit of leeway required in making these early budgets. But the trouble with it was that the money we didn't spend went back into the general fund of the state of Nevada.

Well, we got a law passed, then, that our money that we took went into our own account in the state treasurer's office and was available for our use when we needed it. So when our records began to get so bulky (and an architect's record is a bulky folder), and the

storage of that material—. We have no right to throw it away, and it just gets to be too much. So we had to hire microfilming, and we had to take care of these records until we could get them microfilmed. And also, we made each architect who had not been licensed to an earthquake construction examination, he had to write a treatise about earthquake construction which would run fifty or sixty pages, which is another tremendous mass of material to store.

So we began to microfilm all of our stuff. And in so doing, we took the bulky material and stored it dead storage in some warehouse someplace. This has been very successful. I think we'll be allowed to throw away a great deal of this material. Certainly, "e can do it when an architect dies, but we should be able to do it, we'll say, after ten years or five years, some reasonable time. We should be able to just keep the microfilm record.

Then we had to have a secretary, the thing was so great. We had to have a regular secretary, and as I say, as the thing grew, we had enough money to hire a secretary, and as the result is today, we have a secretary whose work is marginal. We have someone that does the microfilming for her, and all she has to do is have a little can about so big around [gesture] and know what's in it. She gets \$6,000 a year. And we have an attorney who gets a retainer plus the cost of any work he has to do. And we're able to finance these things, and we haven't touched our money with the state. As a matter of fact, our surplus is growing a little bit all the time.

So we're able to do an acceptable job on an architect who comes in now. We'll take an architect who has, from NCARB, a blue cover report which says that he has taken an examination comparable to the examination required by the state of Nevada, and that these are the marks he made in the various subjects,

and that he has been recommended by the following people. Those recommendations have been checked to see that those people did say those things and that they did mean them. And we frequently find that some architect that's made a very nice recommendation is some guy that says, Well, I couldn't write down exactly what I think, but I don't go that far. Actually—" [laughing]. So they check those recommendations.

And this man has a blue cover, which says that he has really taken [the] examination. All right, we'll say he takes the state of California's examination, which requires him to take an examination in the engineering of earthquake resistant construction. He has complied with everything the state of Nevada needs, except with one thing; the law says the man must have his fingerprints taken by [the] FBI, he must have a picture of himself submitted with his application and those fingerprints, and then he must appear before the board in person so the board says, "This is the man whose application has been submitted," because we have had instances of a man who submitted the qualifications of another architect and examination material (which was in collusion with the other architect, by the way) and was trying to get licensed on that basis. But with the pictures and the fingerprints, the fact that he must appear before us, we pretty nearly killed that possibility of a man getting a license with somebody else's qualifications.

And we also have a requirement for a personal interview, both before and after an examination. I think we're going to cut out some of these interviews. The bunch of fellows trying to interview some young architect, they ask some pretty silly questions. Anyhow, this youngster comes, and we decide from what he tells, and generally, from his attitude. You'd be surprised how much attitude, how much personality is involved with the decision to

give an architect an examination, a young architect. Some of them are so scatterbrained, they are so social-society oriented that we don't think they're ready to take an examination and enter a profession where they just might be a disturbing factor. And once in a great while, some youngster who comes for an examination is told, "Well, we don't think you're ready yet. You go back and get more schooling," or, "You go back and get more experience, and then we'll give you another hearing," because it costs money to examine them. It takes time to examine them, and it is very discouraging to have an examination in which a very low, low percentage of men pass it. And if you get a lot of unprepared people, your percentage of passing goes way down, and the complaints that begin to come in are that your examination is unfair, that you're keeping people from practicing in your town. So it has its beneficial aspects, really.

And then the interview after the examination simply checks up on what the man thought of the examination. This is valuable to us in preparing another examination. There are very valid criticisms come up from time to time. And I'll tell you one.

Well, this twelve Western states, when they write examinations, they knew I was an engineer. My license as an engineer is No. 31. I was one of the early registered engineers, structural engineers, in the state of Nevada. And I picked a job out of our office. And I thought, "Now, here is a job which we have done. It's a logical thing to use for an examination." Well, logical, my foot! It was a very complicated earthquake resistant construction with columns flopping around in the breeze, and overhangs, and what have you, and it required the services, really, of a trained engineer in order to figure it. Well, I had figured it, and I didn't think

I was a trained engineer. I was just another hack engineer. So I wrote the examination, and I wrote it from my figures on this thing [laughing]. And nobody passed it! Nobody in twelve states. No applicant passed that examination, and in twelve states, about half of the applicants read it and walked out!

Well, you can see where Ferris lit. He lit right in the middle of a meeting. And, "What the hell is the matter with you? These are kids!" I don't know how I got so far off base) I had done that easily, and I did not specialize in structural engineering. I'm not a specialist in structural engineering. And I thought, "If I can do it, I guess most any man who's had college training in engineering (which they get with an architectural course, although it's a little sketchy) should be able to do it. So that's the last time that I wrote a tough examination!

Now, this points out the fact that in examining large numbers of young men for a professional- registration—and I don't care whether this is the law or medicine or architecture, or what it may be—it is necessary that the examination be fairly representative of the abilities of the groups of people, groups of people who make application for registration, that we must consider what the universities give them. And this is a function and a very important matter in research that we are conducting now in NCARB (the NCARB is conducting it), as to what the universities are giving to the students as compared to what, as of today, in a state of change, they should be giving to the students, with the idea that this can then be put [to use]. The American Institute of Architects has a committee on education which is interested in all the universities who are giving architectural courses and in the material that they give out and the character of the construction, and all that sort of thing, and they work rather closely with universities to discuss these

things, to say, "Look. It looks to us like you're haywire, that we need improvement or we need something or other" And it's not that the architects are saying, "you must do this to the educators," it's that they're saying, "This isn't working too well from our standpoint. What can we do?"

So that is going along at this particular time, and the attitude for examinations for architects is coming more and more to the point that multiple choice examinations can indicate the level of qualifications of an applicant, and that they can be positively marked, that there can be no difference in approach to the grading of an examination because a man in Nevada has one attitude toward the examination and a man in New York has another attitude, and he thinks, "Well, he shouldn't have to know that. He did pretty well. Well, I'll give him a ten," and this man says, "He ought to know that. He gets a zero."

With multiple choice—and these multiple choice examinations are made up by a firm who specializes in trying to analyze the qualifications of people or projects, anything, as far as that goes, with multiple choice questions. And they have prepared three of our seven examinations now with multiple choice, and they've been working very well. The idea is that this organization will set up, we'll say, a group of, let's say, six hundred questions. Maybe it'd be more, not less than six hundred, I know. And so we as a board get those six hundred questions, and we select two hundred questions out of the six hundred for our examination this year. We can select a different two hundred the next year and another two hundred the next year, and the fourth year nobody remembers the first two hundred, so this works out all right. You have a backlog of questions which will serve you for years. But, of course, you add to those

questions as the changes in the profession occur. And it looks as though some different qualifications should be inspected.

Well, we'll say we take two hundred questions. And we figure that of those two hundred questions, an architect should have a familiarity with a hundred and fifty of them, that a man from Pennsylvania and a man from Stanford might have different elements in their education, different levels of response, and it's not necessarily true that one man should know every one of those questions. So we'll say we think that of those questions, it's reasonable that a man should be able to pick a hundred and fifty of them which he might say he had some familiarity. Then he has four choices. And of those four choices, he can guess; or knowing something about it, he can take a pick from a small amount of information; or knowing the answer, he can pick the right one. And that in a hundred and fifty of the two hundred questions, we're almost bound to get a reasonable idea as to this man's qualifications—the ones he guesses, and all the rest of it.

And then this examination goes back to the company who made it, and they check it and grade it. Then it comes back to us. If seventy-five is passing and they come back with a grade of seventy-two, we will then go through that examination and make up our own minds. If it comes back with a grade of twenty, we will just take a look at it and set it to one side. If it comes back with a grade of eighty-nine, we may take another look at it to see if it's that good. But in general, all borderline marks are checked. Because we are the only authority that can issue a registration in the state of Nevada. I don't care how many people work on it with NCARB or the multiple question people, if we say no, that's it. And if we say yes, that's it. And

we're supposed to say those things with some degree of knowledge about the man.

So as of today, we have an architectural board who are members of the Western Association of Architectural Registration Boards and who have been using their examination. But we are considering the—well, we're going to cut out this Western Association altogether ultimately, before too long, and take NCARB's examinations and give them. And then a man who passes that has an NCARB registration such that he can send it to any state that accepts NCARB and say, "Here are my NCARB qualifications." And NCARB will pull his package and send a copy to that board. And he's an architect in a very short time. As I say, it's coming to the point now where NCARB has reorganized to the point where they are acceptable in most all of the states. And registration between states and ultimately between foreign countries is going to be expedited greatly because of this. And the reason that we organized the Western states was because NCARB was not working satisfactorily. So if it works satisfactorily, it will be a duplicate activity, and of no use, particularly. So it will probably phase out.

So that's our present standing. We have enough money to have an adequate secretary. We have policed our form of application. Now, you can have a form of application which is very sketchy. you can have a form for application which is unusually bulky, needlessly bulky, as a matter of fact, or you can have one that is extracting from the architect that fills it out a pretty reasonable idea of what he has done and what he has in the way of qualifications so that you can say, "He may take the examination," or you could say, "He may appear for an interview to be examined by reciprocity." And this is where the great number of architects are registered in the state of Nevada, is by reciprocity. Now,

at each one of our meetings, we have two members in Las Vegas and we have three members here. We have set up a rule, which we have a right to do by law, that men from Los Angeles and in that area, the Southern states (Arizona, and so forth), who wish to be examined by reciprocity at a meeting of our board, they may come to Las Vegas, and they may appear before the two men in Las Vegas for their examination, and the results may be sent to us in the north. And if we think they're adequate (which we always do), this man can receive his registration without waiting for a yearly meeting of the entire board. And we do that in the north. The three of us hold meetings sometimes twice a month so that architects who have jobs in the state or who expect to hold jobs in the state can appear and be registered rapidly. And usually, a man who is completely qualified, an interview of five minutes is all that he gets, and he gets that because the state law requires him to sit down in a room with us. But it's working very nicely now, and you can see that it did come out of a pretty confused setup twenty-five years ago.

Now do we get along as a group on a unified project?] Well, I don't think that the fact that we are competitors has much bearing on our work as a board. We all come there with the idea of doing something about our profession, which is a common thing, and in which we do not have competition as such. We may be better professional men than others, and that sort of thing, but there's not a competition in it. And the result is that as our board considers the various problems put before us, and those are legal, they sometimes have to do with personalities, they have to do with the qualifications of a man, the technical qualifications of a man for his job. And in most of our cases, as I have said before, these are men who have been registered in other states. We have the report from those

other states on these men. And the only reason we're calling them in is because we are required to see them and compare them with their photograph and their fingerprints, to make sure that they are the man who took the examination in Podunk and he has now qualified himself as an architect in any place comparable with Podunk. So I don't think we have any problem working together. And as I say, a large part of our work is done by holding meetings in both Las Vegas and Reno with portions of the board. A board meeting in Las Vegas, handled by only two men of the five on the board, they reach their conclusions and send us the minutes for approval. And if there is any question, of course, this will be withheld, held up.

!Te just recently, by the way, had quite a shock when the FBI decided that they would give no more fingerprint service to anyone but government jobs and federal law required jobs. And this morning, the reaction to that was so severe that this morning's paper says that they have reconsidered. And, of course, in our state, the gambling industry feels that it would very shortly be put out of business if they couldn't have a check on the employees because this would be, certainly, a green pasture for all the crooks in the world. They could just come in and flash their personality and a few lies about their background and get in and steal 'em blind! So we're very happy that that fingerprint service has been reinstated.

We have never called anyone back. We have never taken a license from anyone. We had one hearing. A firm of architects here in Reno had a failure of some scaffolding, or some shoring, really, and the floor fell down in this. It's a four-story motel over on Lake Street. (It was purple [laughing] when they put it up!) The owner of this facility appeared before the board to ask us to take the state registration away from this firm. So

we held a hearing, which we were supposed to do, and brought these two kids (they were really kids—well, what am I talking about? They were about, I suppose, thirty, between twenty-five and thirty). They made a very excellent, controlled, calm presentation of their side of that controversy. And when it was over, it appeared that this was a revenge sort of a motive on the part of the owner, that this had happened. It had cost him quite a lot of money, and I think the architectural firm had to put up some of that them selves. But he wanted to get even. Now, these two kids had hired a registered engineer in the state of Nevada, an engineer who had been the structural engineer for the state planning board before they hired him. So as far as they knew, he had a background of education and experience, and was entirely suitable as an engineer for a little bit of a four-story job. And he was the man, in his inspections, who failed to catch what was wrong. Now, as far as the owner's concerned, of course, his contract's with the architect. If the architect hires someone who's not competent, then it's still the architect's baby. But here, we have two kids who hired someone who we might have thought was competent, as far as that goes. And the construction was adequate. It was a flaw in a manufactured article shipped in and used that had caused this failure. It was a portion of the floor, not the whole floor.

So we did not even censure these two boys. We congratulated them on how they had kept their cool, as they say nowadays, and how they had presented their case with reason, and we just dismissed the whole thing. This is the only time that we have held a hearing on an architect to discontinue his license.

We have had hearings with people who have come to this country, let's say from—well, one from Yugoslavia. And we had one from Czechoslovakia. They wanted

to be licensed in the state of Nevada; they had moved to the United States. We had to try and find out what kind of school they had graduated from, what was its rating. The California Registration Board have a department based in Los Angeles with people who are supposedly familiar with the credibility of schools throughout the world and their standing as teachers for architects. It's only—we're only interested in architecture. And we got in touch with them, and they didn't have any dope on this. These are called technical institutes, not universities, and that sort of thing. It's pretty hard to tell how good they are, and some of them evidently are very good, and very hard to get into, and they make you work like a dog to get out. So we have that sort of thing coming up.

And then once in a while we have a man who is obviously pretty callow. He just hasn't developed. He wants to become an architect and we feel that if we licensed him or we granted him a registration and he began to practice in this state that his work would be a severe criticism of the profession of architecture and would affect the other practitioners in the state, the legitimate people who are architects.

But in general, our board has been a pleasant, functioning group. Mid we now have gone to microfilm for the storage of all records, and we have a sufficient amount of money. We sent the entire board to Hawaii for one of the meetings (this happened to be a crucial meeting). I have been to Cleveland and to Boston and to Miami, to Hawaii, and, oh, in Portland, San Francisco, and Los Angeles to meetings with expenses from the state board of architecture. We've had that kind of money.

I was going to Boston this year, but I'm getting a little bit tired of going, and I'm also beginning to feel that these architects are a bunch of babies. I was one of them,

and I suppose I was a baby, too. But their continuous argument and talk about a subject that has seemingly been sanctioned by the entire group and is ready for vote, and then, "Now, there's one more thing—, and they get up to a microphone and go through about a five-minute talk, and then, just as we're ready to take a vote, somebody gets up and says, "Now, I have to say that my board does not favor this and will not use it if you pass it." And then comes, "Well, if one board isn't going to use it, maybe we should wait 'til they get set so they can use it," and on and on and on. So I don't have that kind of time any more [laughing].

But as far as the Nevada state board is concerned, it's been a pleasant experience, and I think that it is functioning very well. It, as I have told you, is a member of the Western States Board of Architectural Examiners—but it's not a board; it's an association of the boards of the Western states. And it is also a member of the National council of Architectural Registration Boards.

Its function is only in the matter of registering a man in order that he may engage in architecture work, and we require that he do that before he does any work of any kind in the state of Nevada. However, he can make the complete plans for a building in the state of Nevada in his office in California. And then, if he comes up and gets a license—or gets a registration (I keep mixing those two up, and you shouldn't), he can use that material. And if he happens to be a member of a firm, and he is the only member of the firm who is licensed in Nevada, then he may say that, "This is such and such a project, and da te da te da, and so forth, Architects, AIA," and then he signs his name, "Architect," and he puts his seal—he's required to have a seal, and we use a stamp instead of a seal now, because a stamp prints on the paper, blueprints, and the seal won't.

So he puts his seal on the drawings, and he is the one responsible person, as far as the board is concerned. Nobody else in his firm is recognized at all. He is responsible also for his consultants. Now, if he should have an architectural firm consult for him, a specialist firm in some part of his project, he would still be responsible for the other architectural firm's work.

So those are some of the things that the board functions in. And I think that we have done a reasonably good job, and we have good communication now with the states. We've got quite a lot of correspondence with Oklahoma, for instance, with respect to a man who had taken the examination in Oklahoma for an architect's license, and they passed him. And we've got copies of the examination, and they passed him with marks of seventy and sixty-nine, too, Which we do not recognize. So we refused this man a license. He has become licensed in the state of Utah now, on the basis of his Oklahoma examination. But he still has no license in the state of Nevada, and he has tried to get attorneys to sue our board, and the attorneys have (two of them that I know of) told him that our board is within its rights. So he says we pick on him. And I don't know—maybe we are because I want to tell you that some of the members of the board are real irritated with this guy. And he is not very much restrained in his language about the board, either [laughing].



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## ACTIVITIES WITH PROFESSIONAL ORGANIZATIONS

Previous to the Cleveland convention [of the NCARB], there had been a great deal of dissatisfaction with the operations of the National Council for Architectural Registration Boards.

This organization is dedicated to the proposition that since architects are becoming more and more mobile, are finding their jobs further and further away from home, and even in foreign countries, that the necessity for quick registration in other jurisdictions becomes more and more marked. And the organization, NCARB, was founded in order to make it easy for an architect to go from one state to another state and say to the authorities in the second state, "I am registered in my home state by examination." He tells them what he went through to be registered, and if, then, that was comparable to the requirements for the second state, they could say, "Well, okay, you don't need to come six months from now and take an examination. We'll give you a registration now and you can go to work in our state on your job immediately."

Well, the NCARB, then, was expected to take the data on the architect in the first state and put it in their files, and we'll say they approved it as being representative of the requirements for these states, that it wasn't some state in which you could just go as a friend and become registered, but you had actually taken examinations comparable to those of any other state. So they began to set up examinations which would be acceptable to the fifty states. And then when you made your application to NCARB, they might even examine you, give you a four-day examination. Or they might be able to say, "you took a four-day examination in California, and you passed it, and that is sufficient evidence for us. So give us your record." And they compile the record of your education and the record of jobs you have done to date, the record of your pre-registration experience, and then they also held a meeting face to face. And if they thought that you were a pleasing gentleman who would be a [laughing] credit to the profession, naturally, there was no question.

But if they found out you were a distinctively bad personality, and that in your record there was evidence that this personality had been a deterrent to you, they might say, "Well, we will not register you."

In Nevada, for instance, before an architect can be registered, we take his fingerprints and send them to the FBI. And you'd be surprised how many architects have been arrested for one thing and another. Architects have been arrested for drunk and disorderly, for stealing a gun from the United States when they came out of service—you know. The funniest little things come up that aren't really significant. But anybody who has a real criminal record, that's right on his FBI report, and he doesn't get registered. And we don't have to say, "We don't think you're fit," because we can be sued for almost opening our mouths to one of these youngsters.

Well, this was the purpose of NCARB. Their charges for their services were pretty reasonable. And as those services increased, almost by leaps and bounds, as the trend developed for a large company or a large financial institution in New York City or in San Francisco or Los Angeles to discuss with some prospective builder the financial part of his transaction, it became almost necessary that this owner have an architect with him to give him some advice in discussing the matter with the financial people who had construction people in their staff. And they want to know what you know about building a building before they give you some money.

So here comes a big project. Usually these projects that are started in the big financial centers are big projects, and they need competent practitioners, professional men. And they need them at the discussions where they're trying to figure out whether that money's going to be available or not. So here is a local architect in a big city who is in

on the project. And the project, we'll say, is in Pakistan. So when the money has finally been allotted and the other details have been settled and they have decided to go ahead with this project, what's more logical than the architect who is familiar with the entire project to date should become the designer for the building, or whatever it may be?

So he needs, then, to be accepted in Pakistan by the authorities as a competent architect. And if, through NCARB, he can have the documents that are required, showing his education and his experience, and so forth, with the recommendations of people who have known him and his work (and there are three of those that are required, also), and a report on his appearance for a personal interview which is acceptable, all those documents and any other documents required by Pakistan or Nevada (or any other jurisdiction, is what I'm talking about) are forwarded from NCARB, which is located in Washington. And if they are found satisfactory, this man receives notification, either come or send the money, do whatever's necessary to get registered, and go to work.

Well, they got so many of these requests for registration with NCARB that they didn't have the personnel or the money to handle them, with the result that we began to get reports from architects.

Our law, by the way, has a clause that you must be registered with NCARB. The reason for this is that NCARB, supposedly, had the personnel, the experience, and the routine to examine architects thoroughly and to say to us, "The architect is qualified for work in your state." So our law requires that an architect who is registered by us must have an NCARB license.

Well, it was taking two and three years to get a license. And some men, after six months, just quit trying. The result was that we had

to say, "Well, you are evidently a licensed architect in California by examinations, completely acceptable to us. And this kink in our law, which is for protection against certain types of applicants, does not apply to you. So you make your application for registration with NCARB, and keep us advised with copies of your correspondence and the progress that you're making, and we'll register you now. But we expect you to keep on this if it takes ten years to get your license, just so long as you are continually trying to do it."

This was not satisfactory, with the result that [Elmo] Bruner of Las Vegas was appointed as chairman of a committee to look into this situation and see what could be done to speed up the operation of NCARB to the point where it could be useful and satisfactory to the architectural profession, to actually fulfill its purpose. And Bruner had a heart attack. And Bruner said, "Would you please do this for me?"

So I became the man to look into this situation and to make a report. And I had a committee of—I think a committee of six architects. I remember one of these architects in Maine simply wrote back when I asked him for his opinions and for his suggestions that he was retiring and he wanted no part of it. But in general, that was the attitude of all the architects. They wanted no part of this because they all had registrations with NCARB. And they didn't want to get into any trouble.

Well, [laughing] out here in Nevada in our little state, I couldn't get into much trouble anyhow (and I never have worried much about getting into a little trouble), so I took this thing on. And the more I looked into it, the more awful it seemed that they should be operating an office so inefficiently and so completely without result. If you were a friend of one of the people there, you could probably get someplace.

So, the more I dug into this, the more it seemed to me it needed some "surgery. And the result was I made out a report which simply condemned the whole organization as presently in operation, and very particularly, the man who was the secretary-manager of the operation. He was a simple little guy.

Well, also, since this was exactly what I said, surgery, I didn't want to throw a monkey wrench into the operation to the point where it faded away. The board of directors, particularly with this little architect named Clarence Joseph Paderewski of San Diego, were real nice people, good businessmen, and they were dissatisfied, also. But they didn't want to put up a lot of personal money to make a change, and they didn't want to hurt this guy's feelings and that guy's feelings, and the thing was at a standstill, as far as any change was concerned. So I asked Paderewski, who was the president at the time, if he would call a session of the board of directors and let me read my report, and that if there was something in it which could be changed to advantage, this would be the thoughtful and nice thing to do, that I did not want to disrupt things, but I wanted to constructively criticize. And he said he'd just be glad to do that, and they had a meeting.

And I came in, and I read the report. I had to tell them that this was my report, that the committee had refused to answer letters or to become involved in this thing in any way, and therefore, that in making this report, I did not make it as the result of committee, but since the committee seemed loathe to function, that it was my own reaction.

And they said, "This is fine. We know what you were up against. We've talked about it before."

So I read the report to them, and the guy that I wanted fired—and this is just the way I put it—they ought to get rid of him, that he

wasn't suitable. Well, it developed that he had come to realize he wasn't suitable, and he was thinking in terms of another type of activity for himself at the time. So his feelings were not massacred, anyhow [laughing]. They were perhaps massaged a little.

And they said, "Well, go ahead with your report. We want something to happen. We don't know how to go about it or what to do. But we need an action by the entire body of the fifty states, some sort of recommendation that can be voted on with something like unanimity before we start."

So I started to make this report from a field microphone down in the audience. And they immediately stopped me, said, "Get up on the platform there." The better public address system came from the platform, see. So I got up on the platform. And I read this report. And then, after having read exactly what I wanted to say, I took about fifteen minutes to tell them first that this was an individual report, that I had not had the cooperation of my committee, and told them what study I had made, where I had gotten my material and my ideas. And then I laid on the line unofficially and off the record what I thought about this whole thing. I said, "I think that the report which is going into your annual report in print should be as I have said it because we do not want to permanently hurt anybody professionally. We don't want to make anyone want to leave our organization because we have gotten out of line, but I do want you to know what, after a pretty thorough examination of the facts, I think," and I laid it on the line. I've forgotten what I said. I couldn't tell you what I said. I just know what I said was, "It stinks I" [laughing]

And when I got through, there was a great deal of applause. And a number of them came up to congratulate me on the report and to say also that, "This is the first time we've had a

committee chairman that we could really hear every word he [laughing] said," [laughing] because I got a little hot.

Well, the result was that this meeting voted that NCARB reconsider its setup, that they secure not only a substitute for the secretary-manager, but they secure an office manager who understands putting through large amounts of paper work and filing large amounts of paper work, and that if the money wasn't available that they raise their dues, and that they raise their examination fee, and that they go out and borrow some money if it's necessary, and get this thing on the road.

And this was voted unanimously, with a lot of applause and so forth: "We like this NCARB idea, but we want it to work. So do what has been suggested." And the result was that they did. So this man redesigned and had got a job. He wasn't hurt. And he probably got something more suitable to his qualifications.

They put in an office manager, pretty sharp young fellow. As a matter of fact, before they went through, they had either two or three. The last one is the man who found his niche and is still there. And they got rid of this secretary-manager and got another one. And they got rid of some of their help who had become used to these lackadaisical ways that they weren't even paying any attention to where they filed stuff. You couldn't find it. And when we went through the records, and in the two years they cleaned up a backlog of 7,000 applications from all over the world, either rejected them, or they did something with them, and they got them out of those files. Today, if you are qualified and you have gone through the proper routine to satisfy the requirements of the NCARB, in approximately two weeks you can get your registration, and that means that you can go all over the United States. Several foreign countries now will accept NCARB.

Another facet of this matter was previous to the meeting in Cleveland, this same Bruner and I, in talking this matter over, decided that we should do something in our area to make registration between states easier and faster, with the result that first, we went to Lake Tahoe to meet with the California registration board. They examine some eight hundred applicants per year to become architects. And we said to them, "Look. You have to write these examinations. You have an organization in Los Angeles which rates architectural schools in foreign countries, so that if a man from a foreign country comes and says, 'I am a graduate of something in Poland,' we can find out if it's acceptable here. And you have people who correct these examination papers for you.

Of course, the board finally has to take all examination papers and give their official—. But what they do is to throw out all those what've only got twenty and thirty [percent]. And, really, all they correct are those that are on the border, which may have been given a registration or denied a registration. And they check that and see what they want to do about it. And we thought, "Well, here is all this going on right next door. Why don't we ask them if they'll let us use their examination (which then makes reciprocity between us easy), and let them correct our papers for a fee which will be much cheaper than we can do it, much faster than we can do it. Because a man who takes the examination and waits six months to find out whether he passed it or not is not a friend of the board.

So they said this sounded real good. And we made a deal, that they would give us their examination, we'd give it here exactly the same time that they gave it in California, and that they would then have their people correct our papers and send them back to us, and we could go over them and do what we wanted

to with them. Well, the state of Washington heard about this. And they came down to meet with the California board and said they'd like to get into it. And then California said, "Look, here's Nevada and Washington want to get into this thing. It looks like it's going to work. What can we do with it?"

Well, Bruner and I had been thinking in terms of twelve Western states. So we said, "Well, why don't we get an opinion from the Western states here where architects are busy crossing state lines all around and see what we can come up with?" And we came up with enthusiastic acceptance of the idea, so that we organized the Western Association of Architectural Registration Boards. And we proceeded to write an examination which was given by all—I think eleven states or ten states joined; I've forgotten. I don't think Utah came with us at that time.

But anyhow, we prepared these examinations from personnel in our organization—that is, members of various state boards wrote portions of the examination, and they were checked and approved or changed. And then that examination was given at the same time in all of these places. (Utah didn't come in with us because their state law had a requirement that it didn't fit. Two of the states had to get action through their legislatures to change requirements of the state law in order to do this.) So we did this, and it worked out quite well, except that Guam and Hawaii and Alaska wanted to join with us. And there was a big differential in time. And we had a feeling, particularly with Guam and—certainly with Guam and with Hawaii, possibly, that there could be a cable telling what the examination was like and let somebody take it with a five-hour difference in time, give them time to check up the whole examination and pass it, which probably never would have happened. But we

did have, in Utah, when they finally came in, a complaint in Arizona, the examination had been leaked, and a couple of applicants had copies of the examination before they took it.

Otherwise, though, this western Association worked out very well. We have yearly meetings, and we have a secretary in Olympia, Washington, who keeps us advised of what's going on in all twelve of the states and Honolulu and Alaska. We're coming to the point now where we are discussing the disbanding of this organization because NCARB is becoming more and more useful.

So we feel that we did a good thing for the profession, and it certainly has worked out that architects are traveling those architects that—oh, an architect for Safeway, an architect for Holiday. (Now, the architect for Holiday that came in for registration told me that Holiday now designs their motels by computer, that they program a computer for, we'll say, Reno. There's a list of 4,000 questions. And they program the computer, and the computer comes up with about what they should do—how many rooms, the type of building—the works. And then this computer information is given out to some local architect, who, under the supervision of the staff architect for the organization, prepares the plans for the local job.)

The theme of the last two meetings of the National Council for Architectural Registration Boards is change. At our last meeting, we had representatives from England, the president of the Royal British Institute of Architects, and his second in command came over—lovely people, just simply lovely people. Canada sent the head of their national architectural association, Mexico sent a couple of people, we had one Japanese, and we had Poland—well, I've forgotten. We had almost worldwide interest in the thought that the design and construction of utilities, the

large organizations' building is changing, and the necessities for expert design in all facets of the organization is becoming more and more necessary. So the old concept of the architect as the man who did it all has passed.

[I will tell about the organization of the AIA chapter here.] Well, the AIA chapter started with, I think, seven or eight architects. I was one of the first chairmen, I remember. In fact, there're so few of us, I was chairman a couple or three times. I don't know whether we got a charter, or what, from AIA, but we were recognized as a chapter of the American Institute of Architects. And as the architects, the local architects, continued to grow, and as the youngsters continued to increase who were working toward registration, we got a larger and larger chapter, and we had quite a group of junior AIA members. They recognize the juniors, and they allow them what they call a junior AIA member, but the juniors don't vote to spend our money, [laughing] or anything of that sort. And it got to be rather unwieldy in that with one chapter, we either held meetings in Reno or meetings in Las Vegas. To get rid of that, we held them in Tonopah. And they came up from Las Vegas to Tonopah, and we went down from Tonopah. And this also got to be quite a chore because the facilities there were not very good. And the sleeping quarters that we got, I think the beds must've been sixty years old! And we got tired of that, so what we did, we broke up into two chapters, the northern chapter and the southern chapter. I'm not familiar with the southern chapter. I think it's a little larger than we are up here. But we have our own meetings here, and we have speakers and that sort of thing. Industry is very happy to send films and representatives to talk about their products or their methods, and that sort of thing. So we have two functioning AIA chapters in Nevada,

and they're both doing what I consider to be an excellent job.

They are sponsoring classes for these junior men so that in the upcoming examination, they can have, we'll say, six weeks (one night a week or two nights a week, whatever can be worked out) of instruction in some subject or subjects in which they are weak to help them become registered. This is our business, is to see that qualified people are registered and that the profession in our state is practiced in accordance with the ethics of the AIA. The ethics are just simple horse sense; I don't know what you'd call them, honesty and forthrightness, and [laughing] all the rest of that idealistic stuff. They don't mention your religion, but they damn near do. So that's AIA.



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## COMMENTARY ON CHANGES IN PRACTICE OF ARCHITECTURE, 1920-1970; CHANGES IN BUILDING MATERIALS

Well, I can say this, and I think I've said it before, that the practice of architecture was not regulated in 1920. You could say, "I'm an architect," take jobs, design buildings, and there was nobody in the city or anyplace else that checked your work to see if it was safe from falling down. Contractors, if they had to build something that didn't look safe, they'd complain. That's about where you got your protection. We did not have air conditioning. We did not have the appliances that we have today. An electric light was just more or less of a matter of a switch and a light on the ceiling. When they began to use floor lamps and cut lamps off the ceiling, why, this was quite an innovation. And I think some of us thought it was never going to work anyhow. And with the early floor lamps, it didn't do too much good; you had to sit alongside them.

As I say, we didn't have air conditioning. The only air heat we had was what was called a floor furnace. You got a real hot fire going, and the hot air came up from the floor and went up to the ceiling, and then it gradually came down 'til it got at the height of your

head and you got a headache. And to get it down to the point where it was comfortable for children to play on the floor, the older folks were in trouble because it was just too hot up where they were.

Heat was largely a matter of steam radiation, or hot water radiation, either one. And I could design either steam or hot water radiation satisfactorily. I was conversant with boiler design, with chimneys adequate to burn the fuel. The burners were nothing like the automatic furnace that you have today, and as a matter of fact, a great deal of the firing was done with coal. you built a fire and you put coal on it, and you continued to put coal on it. You learned to bank your coal fires so they'd stay all night, shovel some coal on it in the morning.

So I would design. Electrical work was very easy for me at the time. I designed the electrical installation, I designed the heating, and what ventilating I could think of. We used to have what we called a nighttime ventilator, which was simply a matter of pulling the air out of the attic, cooling that off. And I did the

structural engineering and the architectural work and the specifications—the whole thing, the whole bit. And this you could do, because if you did it about right, it was okay. And if there had to be some changes made, the contractor usually complained about something and you made some changes, and then things went along without much trouble.

Then there came the innovations. I remember that before World War II, for a long time, we had had very expensive panel boards for the lighting in the house, panel board that had a bronze framed cover with a cylinder lock on it, and it had a lot of connections on the inside, and they were quite expensive for the time, like fifty, sixty, seventy dollars.

It was in the Depression. The minute the Depression came along and people couldn't buy that sort of thing, of f the shelves came inventions that had been sitting there for a long time that were cheapening these things. And one of the inventions was a little box that held four circuits, cost about two dollars and fifty cents, perfectly adequate to put in the wall and take care of your home lighting, instead of fifty, sixty, seventy dollars. A lot of things, a lot of things that were economical, came about during the Depression. And they had not manufactured them before because they could charge more money for more elaborate things. This is part of the way economics works.

We began to get oil burners with controls, and pretty soon it became necessary that you have somebody tell you what kind of an oil burner you ought to have and what kind of oil you should burn in it. And then we began to get the floor plugs around for appliances. And, in the early days, people would take a floor plug and they'd put their lighting on it, lamps, and so forth, and then they'd put an iron on it, and then they'd put a something else on it, and the next thing you know, they

had so much current going through there that they got a fire.

And I can remember when I did—oh, one of the jobs I did was the Golden Rule Store for Mr. [John A.] Cooper. And I was adding or remodeling a second floor for the Golden Rule Store. And I went in to check their wiring in the attic. And they had their show windows. And at that time, the lighting in show windows was coming in for a lot of revision, the intensity of the light, and all that sort of thing, and the effect of light on colors. For instance, the use of fluorescent tubes ruined—would turn some colors black in a show window.

Well, anyhow, they had been increasing the amount of light in these show windows without increasing the wires from the panel board. (You know what a panel board is. A panel board, the lights come in from the city streets to your house, and they're put to a panel board. That puts all the power you're going to need all in one place, and then you take off circuits from there to light two rooms and light these two rooms, and it's for a stove, and so forth.) Anyhow, they had increased the lighting in these show windows to the point that the wires were badly overloaded. And when I went in the attic to check some of them, the insulation had been baked by the heat in the wires to the point that it would fall off if you touched it. And it would be very simple for one of these mice, or something, to take a little gnaw at a wire to see if it was any good. Now, off comes the insulation, there's a short, and you could have a fire. I had to change the wiring completely. Now, this happened in a large number of stores. They increase the use of the electricity on the original wiring, which was done with No. 14 wire, usually, and it should have No. 12 wire.

Today, No. 12 wire, for just one circuit of 1,500 watts, is almost standard. They won't go

any more than that. They will not let you, by regulation, put more than four appliances on a floor plug. You have a duplex floor plug. They have gradually increased the size of wiring because of the increase in use of electricity, and regulated the number of connections that can be made to various kinds of outlets. And it has been quite necessary.

This has come to the point now where, with motors for air conditioning work, compressors, and fan motors running day and night for all year, sometimes, that it became necessary that their bearings be designed so that as much as possible they should be lifetime lubricated so that you don't have to put oil on anything. In the early days, you had to put oil on everything. You had to go around and—most people just didn't do it until it got to the point where it wore out. You had to put new bearings in a lot of pieces of equipment, because without oil, they wore down, and then the thing began to jerk, rattle.

So there was electricity. It got so complicated that gradually, it became necessary that you have some engineer do your work. Then the first thing you did was to go to the power company and locate some engineer and get him to moonlight and do some work for you, which usually turned out to be unsatisfactory because he was not a designer. The engineers began to appear on the scene, and you began to hire a consulting engineer for your work. And this happened with heating, with ventilating, and finally, you began to get mechanical engineers who were licensed in their areas by the city, or the state, to do their work. They had to have certain education, they had to have certain qualifications, they had to take an examination. You hired one of those people to do your heating, your ventilating, and your plumbing—a sanitary engineer (they were both). The electrical engineers likewise

became specialists. And an architect had to hire an electrical engineer because he could not do, again, what I used to do. He couldn't keep up with it.

And so then acoustics began to come into the picture. People going to auditoriums, they began to have larger and larger auditoriums, and they began to have more and more features going into those auditoriums because the population was increasing rapidly. And a lot of people were interested in a lot of different things, and they couldn't hear well. And what's the use of an auditorium? They quit using it, almost. So they began to try to correct faulty acoustics so that you could hear in an auditorium. And pretty soon, it became necessary to have an engineer who was a specialist in acoustics.

Materials, shape of the room, the whole works—everything involved in acoustics is a specialty, the reflection of sound off the walls so that it doesn't come back above the threshold of sound. It's all right if it comes back at you, but if you can't hear it, it doesn't bother you. But if I speak to you here, and my sound traveled, say, a hundred feet to a reflecting surface which bounced it back to you, and you heard me say the word and then you heard the tail end of the word all fuzzed up as it reflected back to you, pretty soon it would be hard to understand me, and you'd be tired of listening to me. That's what acoustics is all about. That's when they began to design these acoustic tiles with holes in them. The tiles were such that high frequencies would hit the tiles and go into these holes and be trapped, and a large percentage of that sound would not be reflected back because the holes trapped it. But the lower pitched sounds, the long distance waves, would hit the tile, which was soft, and it would give and not reflect back like a hard surface would.

The early theory of acoustics was a hair-felt blanket that gave when sound waves hit it and did not reflect it back. And then they came to realize that these short wave sounds, the high pitched sounds, came back anyhow. So they put some holes in. And the sound waves got into those holes, and a certain proportion of them were trapped there. And as long as they could reduce sound below what they call the threshold of sound, or the threshold of hearing, why, it would not affect you. They can't kill it; it bounces around. Nobody knows how long sound bounces around in an auditorium. Instruments show that it goes quite a time after, and by quite a time—this is a very, very short time, in terms of seconds. But for quite a time, it's bouncing around in there before it dies out completely.

So there you are, with your structural engineer suddenly becoming necessary, your mechanical engineer, acoustical engineer, your electrical engineer. And then you began to need designers who were familiar with the products that were available because we began to get a terrific number of products that we could use. Some of them were economical, some of them were very beautiful, and things were changing. You used to use hardwood in three quarter-inch thicknesses. And as hardwood became scarce, they began to make it thinner and thinner 'til pretty soon, they were putting out oak flooring three eighths of an inch thick. And then they began to put it out a sixteenth of an inch thick and paste it on a background. They even started photographing it, [laughing] putting the photographs on a background.

Plastics came along. And plastics is going to materially affect design before long. Aluminum came up, and they began to be able to alloy aluminum, to weld aluminum, which they couldn't do when they first began to put it out. Aluminum will be more and more

important in the structures as time goes on, and aluminum is one of the most available elements in the world. It's every place! Getting it out, of course, may be a little difficult, but there's lots of aluminum.

And then we began to feel that planning needed a man, that you planned a building for the use to which it was being put, that if you designed a home for a man who had two children and was going to have no more children (his children would go to school and then leave in the normal course of events), he would have the facilities, the living facilities, for the four people. And then, if those people entertained a great deal, that house would have to be Bet up so that entertainment was facilitated. If they had a lot of children over to play, and so forth, it became necessary that they're able to do that.

Also, at that time, they began to feel that the practice of burying all of the utilities—electric wires and drainpipes and water pipes, and so forth—was very bad because you couldn't get at them to repair them without tearing the house up. So there was another factor in design, to try and get these things so they could be maintained comfortably. And this started with homes. And then, simply as the engineer who designs, we'll say, a mining operation, a mining mill, [he] made what he called a flow line diagram. If the ore came in here, something happened to it; it went from there to something else, something happened; it went from there to someplace else, and from there, someplace else. This was called the flow line. And he tried to design a mill that economically and efficiently carried out this series of treatment for his ore. The same thing became necessary in the larger and larger and more complicated buildings that were necessary for modern industry.

Modern industry now has a separate machine for almost everything you want to

do. And that machine has to have power. Frequently, the product has to have a climate—that is, a humidity in the air, and a temperature of the air. Sometimes, it must be maintained. In the design of a big bridge, such as the Bay Bridge, we'll say, [in] the structural steel, they realized that when they're going to come out from one shore with a steel structure and out from the other shore with a steel structure 'til they get within five or six hundred or a thousand feet of each other, and then they're going to drop in between them a prefabricated structure that they can put a pin in this end and a pin in that end, and they have finished the bridge, they suddenly find that if the steel was designed and fabricated in a plant where the temperature varied up to a hundred degrees from seventy, and they took it out, it was not the length that it should be. So they have to take the average temperature, we'll say at midnight on the Bay Bridge, in the summertime or whatever time of the year they're going to put this thing in, and they're going to fabricate this steel at that temperature in their factory. They're going to keep it there as much as they can. When it's put together, they bring this material out to the bridge. And they hoist it up to fit in between these two ends. And suddenly they find that it's eighteen inches too long or too short (it happened to be—with this particular thing in the Bay Bridge, it was eighteen inches out of line). And very shortly, the weather changed, and the steel cooled a little bit (I think it was cooled), and the contraction of the steel brought it back to the point where they could drive in this pin. The pin is only about this big around [a foot or so] and weighed about ten tons [laughing]. And so everything had to be just exactly right.

Another thing that illustrates that need for exactitude was the setting of the anchor bolts for some of the bridge sections where

the anchor bolt is something that fastens the bridge to a concrete foundation, we'll say. And the anchor bolts could be this big around [four inches] and that long [eighteen inches].

They tried to shoot [with transits] the location of anchor bolts from three locations. One of the locations was on the Albers mill buildings, and one of them was over in Oakland someplace, and one was on the island. Each one of those men would line up and shoot where he thought that bolt should be. And if they didn't intersect in a point, those three men continued to work with their instruments and tried to find out exactly what had happened that they didn't intersect in the point. And they never tried to set those bolts until those three instruments were right together, that that was the place the bolt should be. Well, one day, they could not get one of the instruments to jibe in with the other two. They couldn't figure what was wrong. And they were a week working on it.

And finally [laughing], one of the men said, "You see that spar out there?" Now, this was a thing like a telephone pole floating in the water, and I think it was used as an anchor for small boats to come out and tie up to it, like a buoy. It developed that that thing was right alongside—not in the line of sight from this man, but real close to it, like four, five feet, and that the light rays from the sun hitting that thing bounced a little bit. And that deflected his sight. They moved that spar, and he zeroed in with the rest of them.

So exactitude becomes necessary in many of our modern buildings because a great many things are prefabricated in one location and brought to the building. This, again, creates the necessity for experience and knowledge and exactness that requires, very frequently, a specialist to help the architect.

It's been, oh, so interesting, the change in construction. In the early 1900's, when

McKim, Mead, and White were famous architects in New York City and they designed buildings. The buildings always had stone cornices, and they had stone columns and capitals, and it was very expensive. And as the economy became a little more and more strained through the years, they began to cut out those things. And the last of those masonry or clay products decorations to go was terra-cotta, which they used to burn in colors, even, for you. It's very expensive to get any terra-cotta. Matter of fact, there's only one place on the West Coast that makes terra-cotta, that is, modeled terra-cotta.

It became more and more necessary that architects design more severely, we'll say, and they began to talk about the lines of a building, the overall effect of a building, because of its outlines, not because it had a lot of gimcracks on it. Now, we're getting down to real design in my book. But what happens in commercial design is that up they go, twenty, thirty stories, and fill the thing with glass, and that's it. Or, they run some verticals up and fill it in with standard panels, fill in between these verticals at each floor with standard panels of aluminum of one kind or another, and put the glass in those. The spandrels are insulated to stop the exchange of heat in or out, comparable with that of a brick wall. Mid suddenly, we have a building which, instead of having a brick fascia, or a brick outside wall which is very heavy, has an aluminum outside wall with light insulation in it. And suddenly, your design is materially effective because it's only carrying a small portion of the weight that it had to carry before. The design of buildings, as I say, has been materially affected by the economics of the country. And a great deal of careless design has gone on because architects didn't figure there was a chance of building unless they got it right down to the lowest bit of cost.

So the attitude today, as I started to say about the planner, is a man who delves into your business. In a hotel, for instance, how many rooms can a maid handle? And how should you design it so that everything is handy—the supplies from the basement are handy, the storage on each floor is handy, the kind of dollies that you will load up—so as to get the maximum number of rooms per maid. And then immediately you begin talking about the furniture that will take the least amount of maintenance, and the rugs that will take the beating, and also the rugs that can be best cleaned with the kind of a vacuum they're going to put in, whether or not they'll have a machine vacuum or appliance vacuum (machine vacuum—I mean a central vacuum plant; many buildings did that for a while). So the planner finds out what you want to do, what your costs of doing business are approximately, and what your income from the thing you turn out is, and what your margin of profit is, and he tries to design a building that will give you, with profit, the kind of a facility that you need. And it frequently comes that the man's ideas—the experienced manufacturer's ideas have to be modified because the planner shows him a better way. So a planner becomes a part of an organization.

The next thing that happens, they begin to say, "Now, we have zoning ordinances, and so forth. The kind of a building that you can put in a residential district is one kind, and the kind you can put down among a lot of steel mills is another kind." And you have an urban designer, a man who tries to take care of the environments and make them easy, make them pleasing for the people who have to live in them. So now we have an urban designer who has to move in on the big projects.

The projects are changing from what was a big project at a million dollars forty years

ago to fifty million, a hundred million, and nobody thinks anything of a hundred million dollar project. But as these projects grew in importance and size, the matter of getting the money for them at an interest rate that you could afford to pay becomes vital. So here comes a credit man who can now take what the planner lays out. The estimator (and this is another man that has to come into the picture pretty soon) is a man who can estimate the cost of a project, with the contractors using modern equipment of all kinds to do away with labor costs as much as he can, with a contractor that prefabricates and that panelizes, he's made his estimate.

Now your credit man walks in, and he checks the credit of the owner, checks his financial condition. And he then can go to the bank, and he can say, "Here is this man, and this is his financial condition. Here is this building that he needs to expand his project, or a new one (whatever it may be). This building is going to cost so much money. It will turn out this much business. It will make this much profit under today's conditions and projected conditions, it will increase, or it won't be as good" (but he has to project at least ten years for a loan). And he finds out that the bank can't lend him the money because they have regulations, the federal people, that they can't go that high.

So he goes to an insurance company, and he puts the same thing up to them, And they can lend him money. He goes someplace else, and they can take a second mortgage if it's necessary. And he might get somebody to loan the bulk of the money and someone to take a second mortgage on the furnishings, or something of that sort.

Now, when [Abe] Zetooney built the El Cortez, he signed up a lease for ten percent with the operator. And the operator bought the furniture on tick. At that time, gambling

came back and six weeks' divorce went into effect, and in two years the operator paid off the entire cost of his furnishings, paid his ten percent rents as they came along, and made a nice profit. So a credit man, in that kind of project, would be considering whether or not it was possible for six weeks' divorce to be voted in, and it was possible for gambling to be voted back. And that if that happened, then a building that had been designed to rent for two dollars and fifty cents a night, they could get anything more than that that you want. But nobody up and down the street could rent any lower than that. So you met your competition at two dollars and fifty cents a night. He got six dollars a night on a building that was designed to rent for two fifty a night! So the credit man, in that case, would have been a very valuable adjunct, although it didn't make any difference. They did it anyhow. But that's what I mean by the credit man.

Now, speaking of computers, my partner, Graham (and he'd probably give you some dope on this), went to a computer school in order that he might learn how to program a computer. This was in relation with our job at the University, where there will be quite a bit of computer [work] going on in the educational building, computer work. And while he was there, they mentioned the fact that in making preliminary drawings that you could make a preliminary which roughly satisfied the requirements of your owner with just lines. You didn't put a lot of data all over the place, but you're just breaking up the spaces and the traffic such that it complied with the necessities for the owner, and that you then put that into a computer. And the computer would then give you a preliminary drawing. We'll say that your drawing was taken looking straight at the building. But you wanted to find out what it would look like on a

hill, six or seven hundred feet higher than you, and a quarter of a mile away. The computer would give you a drawing of this building that you had made from that viewpoint.

The way it was worked out, you had to give the coordinate. You had a sheet with a lot of little lines both ways, and here was one end of a line, and here was the other end of a line. So you gave it [to] the computer there. That was sixty that way and eleven this way [gesturing], and this was ten this way and nine this way. That defined one line in the drawing. And you defined all the lines in the drawing in that manner. And the computer, then, from then on, would take over and furnish you as many views of that particular layout as you wished for about three to four hundred dollars. And we figured that it would cost us in the neighborhood of fifteen hundred dollars to do the same sort of thing, several different ways of looking at a preliminary. So there's one thing that computers have come into. Whether it's valuable or not remains to be seen. It's being used from time to time, and they may drop it. It may get good.

And, of course, I was very interested in the fact that Holiday motels have to go through a computer preliminary before they start making a building. This all ties in again with, I think, what I have said about organizations that have a real estate man, a credit man, financial man, a designer, an engineer, air conditioning man, and so forth, in one organization. So as they go through a building, they prepare for all of these things. It's very simple, that, if you're going to have air conditioning with big sheet metal ducts running around, there's got to be room for the ducts. And some designer or planner—we'll say a planner is the first man to get busy on it—may not have sufficient information to say, "Well, I'll have to have a first floor of twenty-two feet in height in order that I can

have a twelve-foot ceiling and enough room for the duct work."

So an air conditioning man who is handy there says, "well, from this thing, I think you should have six feet available between the first and second floors for the duct work. You've got to have some vertical shafts here and there through the entire building, the same as your elevators and your stairways go through, in order to get duct work up and down, and piping up and down." And that's the electrical man, too.

I think one of the first organizations to function that way was in Omaha. And they built a life insurance company building, and they wanted light that was the same, practically, as outdoor light in the shade. They wanted no shadows of pens and hands on paperwork. So they had overall ceiling light. And they used radiant heat. And they had warm walls, warm floors, and, of course, warm ceilings, too. And the heat, radiant heat, when it hits you, it's dead. When radiant heat hits you here, you absorb what there is of it, but it can't go anyplace else. You've killed that. Well, if you've got it coming from above and below and from all four sides, every square inch of your body gets an amount of heat that is comfortable. And you have no drafts. So this building, then, did that. And you can imagine the technical assistance that was necessary in order that each room could have the appropriate amount of radiant heat and the right amount of light. If you wanted a hundred foot-candles at desk height, for instance, you would have to have a certain amount of light, and you also had to have light that would not generate a lot of heat. You couldn't put light all over a ceiling, electrical appliances all over a ceiling, without generating a great deal of heat when they were incandescent. But when they're fluorescent, you can get light that's almost cool, as far as the generation

of heat is concerned. So all these things go together, and it's part of this entire scheme that organizations, architectural organizations are reacting to the necessities of the day, and along with registration and all the rest of these things, they're all changing.

When I first practiced architecture, the Rena Press Brick Company here was in full bloom. We had excellent brick available as a building material, and building after building after building went up in brick. We had brick masons, too, who knew their business, so that a great deal of building work was done with brick. And it was common brick; you didn't make a face brick. If you made face brick, you had to bring them in and the freight on them was terrific. So we didn't have a great deal of face brick.

I told you about the Cladianos building. That is, I think, a rather classic example of brickwork of those days, when they would cut brick and make patterns with brick, and be careful of it and be proud of it when they got through. They would be sure that the joints were uniform, and all that sort of thing.

I remember in the El Cortez Hotel was one of the first instances of union interference in brickwork. There was a man in the middle of the line—the way they do brickwork, they have a roan at this—at one end of a wall and a man at the other end of a wall, and they build up four, five, six courses of brick very carefully, just right, to what they call a story pole. They mark out on this pole (they used to, anyhow) —mark out on this pole every course of brick from story to story. And they called it a story pole. And on the corners, they'd set these up, and they'd then lay brick to these exact courses. The thickness of the joints was set so that the brick would work exactly from floor to floor the way they should, or in any way that you needed to have courses of brickwork to fixed measurements. They'd

make the story pole between those fixed measurements and then you'd lay the brick as it had been laid out on the story pole. And on the two ends, these fellows would lay up six or eight courses of brick; and then, when they got that done, they'd string a line from this course to the same course at the other end, pull it taut. And then the bricklayers in between would lay all the brick to that line so that you had good, level courses of brick and that the joints were all the same. And it worked from story to story.

Well, there was a fellow working in the middle of the wall (there were probably six or eight bricklayers along each [side], building a section of the wall). This fellow working in the middle, he was not only laying up the brick, he was a fast worker. And he was busy putting in brick, and he could lay four or five bricks for this man, four or five bricks for this man [gestures], and he was told to slow down. He said, "I can't slow down. That's the way I work."

So after a couple or three days with him showing up three other bricklayers as being a little bit slow, he found himself laying in the gutter one night with a bloody nose and some teeth gone, and—really fixed up. And he left town the next day.

That's the first time I remember of union interference in buildings. And that was in 19—El Cortez must be thirty years old, at least, maybe more. Must've been back in 1930, or something like that. (The first union I remember is the IATSE, the International Association of Theatrical Stage employees [which] came in here.)

However, we used a great deal of brickwork, and we used a lumber, a material which was called Oregon pine. It's a lumber from Washington and Oregon, which is now called Douglas fir. It's a very fine structural lumber, quite strong, and also ponderosa pine, which is a relatively weak lumber, but actually

very good for construction work. Most all of the early buildings that I have torn into had ponderosa pine joists, floor joists, and ponderosa pine studding. And they were not surfaced as they do nowadays. They were just sawn, and the rough, sawed surface was left and put in the building that way.

As time went on, staying with the lumber for the time being, the Douglas fir, of course, or the Oregon pine was shipped in here from the northwest. And the war came along (this was World War II), and the lumber interests said they wanted to shave some of the lumber off of the studs and joists to save freight, and that they would increase the working stresses of this lumber to make up for it. Because you had a smaller joist, it was weaker. But if you increased the working stress from 1,600 to 1,800 pounds a square inch, that two hundred pounds made up for the difference. And the same joist did the same job. They justified the increase in the working stresses by saying that, "We didn't grade it at all for a while; we just sawed it up and sold it. Then we began to sell it in various grades at different prices, get a little bit more money that way for the material."

So this was a temporary thing when they started. They were putting up these quick buildings for big barracks, and so forth, -or the Army and the Navy. And these would be torn down, of course, and when they got back to doing civilian building, why, we'd get back with the old working stresses. But we never got back with the old working stresses, As a matter of fact, there was a further reduction in the size of the joists, so that a two-by-four is one and five-eighths inches by three and five-eighths inches. And a two-by-six is one and five-eighths inches by five and a half inches. It isn't actually two-by-six at all, Of course, [when] they did that, they got more joists per tree, they got less freight costs per joist, and they got higher working stresses so

that the lumber was more available for larger construction purposes.

And then they began to kiln dry joists so that they wouldn't shrink. Now, for instance, when I built the first addition to the El Cortez Hotel, I had to put in wood joists, new wood joists, alongside of old wood joists. Now, the old wood joists had shrunk as much as half an inch. Just to give you an idea about shrinkage, I found two-by-fourteen joists (which is supposed to be thirteen and a half inches) in the Parkway Hotel when it was figuring on doing some work there that had shrunk, and they were twelve and a half inches in depth, instead of thirteen and a half inches—shrunk a full inch.

So if you put in green lumber, naturally, it's going to dry out and shrink. And some of the lumber that we got after World War I, if you hit it with a hammer, you had water in your eye [laughing] (that's what they used to say).

Well, anyhow, they began. On this El Cortez thing, I used kiln-dried joists, two-by-fourteens, and put them level with the old joists where the floors joined, and they've stayed there. The kiln-dried joists did not shrink. And there's no crack in the floor or no bump in the floor where these two things came together. And then they began to put in creosote on some to make them waterproof so that they wouldn't dry rot. And then they also began to treat lumber with some impregnation that made it difficult for it [to] burn.

So as of today, we've started with rough-sawn ponderosa pine out of our local timbers. We practically never use ponderosa pine at all for structural purposes any more. [We've] come through Douglas fir, and then the reduction in size of Douglas fir, the increase in working stresses of Douglas fir, the treatment of the joists to stop rot. For instance, when you put studs down over a floor, you usually

waterproof—what they call waterproof—the lower foot or so of them so that water can't get in and be sucked up and rot the joists. So we've had the treatment for waterproofing, we've had the treatment for fireproofing.

And we have had in the back of the minds of the lumber people for a long time the possibility of grinding up lumber—the trees, roots, limbs, trunk—everything, and then cementing it back together into a structural member such as a joist or a stud which would have a positive working strength for all joists. And it was always there. It didn't have knots, it didn't have imperfections, didn't have cracks, wains, bark, or knots to change the characteristics, the working characteristics of a piece of lumber. They would be uniform. And they have come to the point now where they make what they call particle board and chip board. Particle board is ground-up lumber cemented together, which is constant in size. It won't shrink. And they make doors of it.

I have doors in St. Mary's Hospital four feet wide that close exactly, today, the same as they did when they were first put in. And they haven't warped, they haven't shrunk, changed in size in any way. They're just perfect. They cover this particle board now with various types of materials, vinyl materials, which are very hard and which they can simulate the grain of wood. They could make it look like mahogany or like oak—most anything they want to make it look like. And it's hard and impervious, and you will get a door which doesn't even have to be painted, some of them, with these coversine. Sometimes they can photograph grains of wood and put it on these coverings. They're about a sixteenth of an inch thick. They're put on with glue under pressures of maybe 2- 300,000 pounds to a door, a great big press that comes down, and also in heat up to maybe two hundred degrees, with the result that this glue simply

goes in through the interstices in the particle boards, and it's just one solid material. They don't come apart, they don't crack off.

They have a process now in which they try to put these materials together, particle board and the surface materials, with just glue and a little pressure and a hammer, no heat and no great big press. And where they have small pieces that go along the edge of a door or something, they take a rubber Hammer and—. It doesn't stay, though. Well, that about takes care of wood.

Well, steel, we used to have a steel which we thought would work at 16,000 pounds to the square inch. It was in WIN beams and angles and channels, and so forth. The design of the steel—they didn't have very good handbooks originally to tell you exact dimensions of steel and exact qualifications, or we call them properties of steel. And we didn't use too much steel. It wasn't readily available.

Also, there weren't engineers that were familiar enough with the fabrication of steel to design steel buildings in outlying areas in these big cities. Of course, they were in outlying areas where a lot of practical building went on. They weren't able to properly design the steel, and they didn't do much welding, either, at all in those days. Everything was riveting.

I was one of the first architects to decide to specialize on steel, back in the '20's, late '20's. And I did it because steel was a permanent material. It had a size, and the size stayed there. And the size buildings that I built, I didn't have to worry about expansion and contraction. It didn't expand and contract enough to make any difference. Now you do. you have to provide chances for it to move a little without warping. I also did the steel because I was disenchanted with reinforced concrete.

The concrete mixes of the day were—many of them were done by hand. They'd put down a big board platform and they'd throw the materials on there by the shovelful. They'd count shovels. Some were big shovels, and some were little shovels [laughing]. And maybe they couldn't count. And then, they'd throw up so many shovels of rock and so many shovels of sand and so many shovels of cement, and throw some water on, and then they'd take and turn it back and forth to mix it. And they get tired along around two o'clock in the afternoon. So it didn't get very well mixed, either. So the concrete wasn't first class. It developed holes and cracks, and what have you. It didn't have the strength that it should have. We worked concrete in those days at 900 pounds a square inch.

Then the reinforcing steel that was put in was of two kinds. They had foreign steel. Belgian steel came in here, which was not as strong as the American steel and was quite a bit cheaper. And some contractors would try to use Belgian steel on you. And the steel placers, people who installed the steel, they, also, were not very bright. They'd lay the steel in the forms, and then when they poured the concrete, they'd stick a pick underneath it and pull it up, and you didn't know where it finally lit.

In the design of reinforced concrete if you have a certain thickness of a slab, and you have a piece of steel at a definite depth above the bottom (we'll say this is the floor), and you can then assign to that slab a certain strength. You could hold in a twelve-foot span a hundred pounds to the square foot, or something of this sort. But if a guy takes a pick and pulls it up, and instead of being there, it's a half an inch to an inch higher, that half an inch to an inch in the difference of the placement of the steel could make a thirty or forty percent difference in the strength, because the higher

the steel is, then the narrower the slab actually is. The theory of reinforced concrete is that as it tries to sag, the steel keeps it from sagging, because steel is strong in tension. Concrete, in the top, is in compression. Mad it's strong in compression. So it keeps it from sagging with its compression. Well, the placement of the steel, then, was so sketchy (and I have found slabs with steel in the middle of them instead of near the bottom) that, as I say, I was disenchanted with the concrete construction. And I tried to go to steel and wood.

Now, in the early days of wood construction, they did not pay much attention to fire stops. And by a fire stop, it simply means—it could be a piece of wood, as far as that goes—anything will stop the circulation of air that's between joists or across the building under floors, though that sort of thing. And where the joists come to the edge of a building, there must be no chance for air to go around them where joists rest on them, on a beam like this [gesturing to show right angles]. Then in between each joist, you have to have a block so that the hot air can't travel over the top of them. That's what we mean by "fire stops," something to stop the circulation of air, which, in a fire where wood creates about forty to fifty times its volume in gas, they travel very rapidly under quite a bit of pressure. And if these hot gasses are blocked from traveling on account of fire stops, why, it's easy to get your fire and put it out before it spreads. But I've seen fires that started on this side of a building [on the left], and they were really burning over here [on the right]. I told you about a classic incident about the B.D. Billingham School. I had fire stops every place, except one. And there was a steel column, just about this square, [that] went up from the basement to the roof. And you know how steel columns look. They have a flange here [gestures], and there's a hollow

space on each end. I didn't put fire stops in that little hollow space. And the result was when this fire started in the basement, in the furnace room (and it got real hot and burned up quite an area around there, two or three rooms, actually), the hot gases went up this little bit of a flue, and they set the roof on fire. And there was a patch of roof there (it must have been twenty feet square) that had caught fire. And if the firemen hadn't been there to take care of it, why, the roof would've gone, too, simply because of one steel column, six inches square, [which] had two little bits of flues up to the top. And the hot gases went up and started a fire.

So the fire stops are very valuable in stopping the spread of fire. And that, with wood construction—you can put up wood construction with large joists and good fire stops and a plank floor, and they call it “one-hour fire-resistant construction.” A fire can't start a great big chunk of wood burning just right now. It's got to get it hot on the surface, and it takes a little time to get it to blazing. It's called heavy timber construction, and it's recognized in the codes. But not much of it is done today.

Well, I started, then, using steel and wood. Then steel changed. They began to make stronger steels with the alloys that they put in it. And they began to roll them to closer tolerances. They also began to put out very accurate information about their product, to the point that, finally, when they built the Bay Bridge, we'll say, the Golden Gate Bridge, they had a very high strength steel in the lower third of their towers, and a medium strength steel in the middle third, and ordinary steel that we use in building in the top third. They used three different kinds of steel. The cables that they use in those bridges is a terrifically strong steel, and is something that you can hardly bend. A wire that large around (like

his little finger], sticking up about that far, they have to take a sledge hammer to bend it.

These cables that they make suspension bridges of are very high strength, I think on the order of 100,300 pounds to the square inch. And that's what I call strong) And the way they make a cable for a bridge [is] to take one strand of steel on a bobbin, and they go across this cable over to the other end and down, and fasten it, and then go back. And these have to be at exactly the same sag as they go to the end that, finally, they can then come around with a machine which wraps them with heavy, very strong wire, binds them into a circle. And they have to be so that they fit. They can't be jammed and leave a hole someplace. They must all fit together side by side and then be bound, and they make this cable out of, oh, say, five hundred or a thousand of these single cables. And that's what that great big round cable is, sitting on the bridge. But that's terrifically high strength steel.

Today, they can make steels in which they can tell you the strength of that steel, what you can use as a design strength for it. They tell you how to work it.

Also, welding has been built up to the point now where welding is a rather positive science. In the early days of welding, men, if they were welding in a shop on a bench like this [gesture], they would get real good at that welding. But if, all of a sudden, they had to weld something that was overhead, no dice. They were no good. If they weld something on a wall, vertically, they weren't good. So for a while, it became necessary that where you were using welders, you qualified them for the work they were supposed to do. They had to take examinations with the building department and show that they could do the kind of work that was necessary on your building.

I can remember here on Harold's Club's seven-story addition, this was all welded together. We had a laboratory from San Francisco in charge of inspection of all welds. And they did it with X-rays and visual examinations and a man on the job constantly watching the welds. And those welds actually replace steel with like steel. There's no crack. It's all one piece of steel, this gives you a construction which was not so feasible in the days when they had riveted construction, because, by welding, you could run a piece over the top of a column and let it stick out. That would be a cantilever.

Now, pretty soon, you ran a beam across several columns. And the effect of this was that the steel rested on a column here, and a column here, on two columns. But when it tried to sag, which it—everything sags when it's loaded; I don't care what it is, steel, concrete. It may only sag a thirty-second of an inch, but it sags. So when it tried to sag, the fact that it was continuous over the top here meant that in order to sag, it was going to have to raise this up like this [gestures]. If it was going to sag here, it was going to have to raise this up. Put it couldn't raise this up, because this was loaded, too. And this was sagging here. The result was that over the top of the columns there was a space two feet, four feet, ten feet, depending on the size of the construction, in which the beams did not sag this way [down]. They sagged this way [over]. Now, this means that if I put up two columns and just a beam between them, it will sag from column to column. But if that column has a beam over the top of it, which will not let it sag there, then all of a sudden, instead of being—. We'll say those columns are twenty-five feet apart. And if I had a simple beam from one to the other, it'll be [a] twenty-five-foot span. And it would sag like a twenty-five-foot beam. But if I have continuous construction

over the top of the column, then, instead of sagging on a twenty-five-foot span, there's a certain distance here that it can't sag because this is going this way [over] and holding it up. And on the other side, the same way, and suddenly, the twenty-five-foot beam is only spanning twenty feet, or eighteen feet. And you can use smaller beams. And when you use smaller beams, you save money. This [is] welded construction and what they call continuous beams, and then they got it into frames so that the columns and the beams and everything were all welded together, and [if] anything moved, everything else had to move around it. If this beam moved this way, the column had to move this way [gestures] because that joint was absolutely stiff. See, reinforced concrete got to the same place. We'll talk about concrete later. They have now built multistory buildings in which they have put great, strong beams across the top and hung the stories below. Why, I don't know.

Structural steel has come to the point now where you can put it up outdoors, indoors. You can take care of your expansion and your contraction. You can have steels of various strengths and with various qualities, such as the resistance to corrosion, high melting points, good weldability. Some articles, like when they first started putting out aluminum, it was very hard to weld. Now they can weld aluminum. Also, aluminum is very stable.

Well, I guess that about finishes steel through the years, give you an idea of the constant change that goes on, and the constant testing and the constant design of mixtures; that is, the various proportions of alloys that go into steel in order to make a steel that will do a certain job, maybe below water, above water, high strength, low strength, and all the rest of it.

Now, reinforced concrete, as I told you, in the early days, was pretty much hit-and-miss.

Anybody thought they could mix up concrete and do a job. But as they began to discover that the poor placement of reinforcement killed the strength of the building and that cracks developed, and sometimes even dangerous situations came to pass, then they began to be more accurate with the reinforcement that they made. In the early days, reinforcement was just a plain bar. And when you put a plain bar in concrete—by a plain bar, I mean round, smooth bar. Then you put a plain, round, smooth bar in concrete for a floor, we'll say, and the floor started to sag a little bit, this bar got into tension. But you can see that if you start something to sag, it gets a little bit longer on the bottom and a little bit shorter on top. And these smooth bars lost their adherence. The concrete slipped on them. And the minute the concrete and the steel do not remain as one unit, you don't have reinforced concrete any more. You've got some steel and some concrete, and it's going to fall down.

So what to do about that? They then started twisting the steel so that as it twisted, if it tried to slip in the concrete, why, these twists came across the line of slip. And it wouldn't slip. And they also said that because they twisted it, they engaged the fibers more closely together, and it became a stronger piece of steel (which was a good sales pitch, but not true, necessarily).

Then they began to manufacture steel with deformed surfaces, little knobs on them. You'll see it. Anytime you see steel, it's just full of little knobs. And these are very, very effective in stopping any slippage of steel in concrete so that you have the natural adherence of the concrete to the steel itself, plus the lugs that stop any slippage. So that took care of that particular situation.

and then they began to make what they called "chairs." They made steel supports for

steel bars. And if the bar was supposed to be just three quarters of an inch above the bottom of a slab—and this is a minimum to give fireproofing to the steel.

Exposed steel in a fire can be heated to the point where it just flows. And you don't have anything. As an example of that, there was a fire in a service station here in Reno twenty, twenty-five years ago. And they had some racks made out of one-inch boards that held tires. The steel structure sank down and rested on top of the boards, and the boards were not burned up. The boards were still strong enough to hold their tires (what was left of them) and the steel. But this was a very light steel construction of a service station. It just simply sagged and it didn't fall down like wood would.

That's one of the things about wood that I forgot to tell you, that when you're making wooden trusses and putting them top of masonry walls—they used to do all wooden trusses. The theory was that if there was a fire and the roof burned, that at some point, the trusses would just burn apart and fall in. But if you had steel trusses, they would sag and pull the walls in, too. The wood would fall in and leave the walls, but the steel would sag and pull the walls in, and your loss would be much greater. The insurance companies didn't like that at all.

And another thing about steel, there came a time—and this, I think I told you, about a time when I had a convention here, and the steel people came in to put light steel construction into the code—I think I told you that story. Well, they did form up all this light steel stuff, and they made it out of sheet steel, almost sheet metal, in order to compete with wood. And they made studs, and they made "I" beams and everything out of this very light steel in order to compete with wood. And the result is that we do have

in the code a paragraph, a chapter, on light steel construction. It's recognized, and they still do some of it, particularly in partitions. They make up some very light metal studs for interior partitions now, that once they have been braced together and plastered, they feel that this is a unit, that the plaster plus the steel (it's like reinforced concrete, really) is a unit, and that it will stand a lot of pressure. And it is a very good piece of construction. You can also have holes in it and put conduit back and forth. through these steel studs, make lots of steel studs. Some of them are sheet metal studs, and some are made of steel—little steel channels, three quarter-inch channels and braces in between.

I've used lots of that, metal lath and steel studs, and it has a fire rating. If you have three quarters of an inch of plaster on it, it has a fire rating of one hour, which means that in an ordinary fire, it would be an hour before this construction would disintegrate. So very few fires get to the point where the fire department won't get there in time to put it out, before an hour.

Sometimes you get into a—the old Riverside Hotel fire, for instance. An old wooden building with no fire stops, it was all afire, almost, in no time at all. The way the gases travel without fire stops is illustrated in a fire in a hotel in Chicago which I told about. And a large number of people, like thirty or forty, were killed in their rooms by these poisonous gases that came in over the top of the transom. And today, you don't have a transom in a hotel over hotel doors because of that situation. That goes with wood construction and fire stopping, and so forth.

Well, I've got into light steel construction and the fact that they began to make metal studs and they even make very light steel joists for residential construction. And then

they have gotten into steel cables. First, they used steel cables to hang bridges. And now, they're using steel cables in large building construction to hold roofs, and one of those is Dulles airport building in Washington. That roof is held by cables across the top.

Reinforced concrete, they began to improve the mixing of concrete by having mixers. And the first mixers they had, they just turned them out any old way they happened to think was a good way, and they were fairly rapid mixers, and the result was that your materials—you know how your washing does in a [washing machine]. It's right out against—hasn't moved at all. No mixing goes on. It's just plastered up against the outside. They went too fast, so they didn't mix. So now, they have mixers, they specify how fast they may run on the peripheral. The bigger they are, of course, the slower they must go. They made mixers which made a very good mix of concrete.

And then, they discovered that the more water you put in with concrete, the weaker it becomes. Everybody thought that you put water in so the concrete would go through the forms and just fill everything all up real good, and real easy, too. So they discovered that the strength of concrete is governed by the proportion of water to the cement you put in. It is governed by the ratio of the various sizes of rock that you put in. Now, if you have, in concrete, a lot of angular rock, crushed rock, and you just throw it together, why, one angle sticks out here, and another angle sticks in here, and they leave a hole, quite a large hole, between them. And they're strong enough to maintain that under pressure. But if you have a rock that is an inch and a half in size all around— not a round rock, but a crushed rock—and you have some that are an inch and some that are three quarters [of an inch] and some that are a quarter, and then some

sand that starts from an eighth down to very fine sand, you have materials that can flow into these holes between the big materials; smaller rocks get in and fill the holes with rock. A good mix, then, of concrete, is one in which there is just enough water with the cement to get the maximum strength. That is, the indicator of the strength of your concrete is the proportion of water to the cement.

So you want the right proportion of water to get the maximum strength. But you also want the right proportion of water when everything is properly mixed so that this flows easily. And it will go into the forms and fill the corners and get all around the reinforcing steel. And in order to do that, then, they invented what they call a vibrator. That vibrator sticks in and it vibrates the concrete, and it shoves around into all corners and around all steel. Then by learning much about the grading of aggregates so that the various sizes of rock did fill the voids, they began to get a concrete that more nearly approximated the strength of the rocks.

You know, rocks are very strong. They haven't even approximated the strength of the rocks, actually, but they're coming closer. They have finally gotten to a point now where they can turn out a concrete and the laboratory will take the materials that are available, local materials, the kind of rock you have to work with, and they'll make a mix, and they'll test it, and they'll tell you how strong that mix is going to be. And then, they will agree to see that that is the mix that goes on every batch of concrete, that it will be that amount of the various sizes of rocks, and so forth. They have screens in the rock quarries, where they crush the rock, so that they actually separate the various sizes of rock that come through the crusher, and put them in piles. And they can put those rocks back together in any way you wish.

So the design of concrete has become quite scientific and quite dependable. The design of the steel has also become uniform and dependable, and the science of putting these together on the job with your vibrators and with concrete crews who are accustomed to just that kind of work and have been trained to do the few little things necessary to be done by a human, you get excellent concrete work, and you can get concrete finishes that approximates a stone finish. You can use white cement, and you can get a finish that is beautiful on exterior concrete. You can also have all sorts of modeling on the exterior by building your forms, like of a photographic film, a reversal film. You can build forms so that you can have markings on the concrete, like joints, and all sorts of things. And concrete is, today, a very fine building material.

Aluminum has come in from nothing to a material which is fine for exteriors on windows and doors. They're trying to make aluminum structural materials now. They have been able to make alloys of aluminum that are fairly strong, which they didn't have before. They can weld aluminum now, which they couldn't do before. Aluminum is very stable. When you take some fine work like this over here ([sliding door] that's aluminum), and you process it to fit into that opening and to have miter joints, and one thing and another, it makes a very beautiful finish. They can also treat the surface of aluminum now so that it won't be stained. The original aluminum was a very shiny thing, and a little plaster on it would ruin the surface of it. They now anodize aluminum for permanence of its surface. And they make all kinds of things in aluminum. Cast iron is almost a thing of the past. They used to have a great deal of cast iron, cast iron bases for steel work and that sort of thing. Now they make that out of steel. So there's aluminum.

Your plasters have come up not only with the usual gypsum plaster or the cement stucco, but now they have various kinds of plaster that are acoustical and have better fire prevention qualities. And they will dry quicker without shrinkage and cracking, and so forth.

I'm not too familiar with the advances in plastering for the reason that plasterers have rather priced themselves out of the market. They—Well, for a while, when they were doing wood lath, for instance, they set a limit on the number of lath you could put up in a day as a union man. And they set a limit on the number of yards of plaster that you could put on in a day as a union man. So the big gypsum companies began to develop a gypsum board, and various other—Celotex, and various other types of wall coverings. The lumber industry, of course, has come up with their various kinds of plywoods and particle boards for wall coverings, with the result that plastering is done much less today than it was in my day. Plastering, one of its benefits was that it was a fire-resisting material. Tie can get by with the same fire-resisting characteristics in a building without the use of plaster.

Electrical work, of course, we used to have heavy conduit, heavy steel conduit. And we had a lot of limited number of connections in boxes for conduit. We had wires, just very simple wires, single wires, not made up of strands. And wiring was a very simple job when we started. Today, they have developed lightweight conduits. They have developed flexible conduit. They have developed lead sheathing, and that sort of thing, on wires. And, of course, with the complexity of appliances and all that sort of thing, they have a wire for almost everything you want to do, and it's a very complicated deal and not something for someone to mess with who isn't a trained electrical engineer.

The kinds of switches—we used to have just switches. Nowadays they have a switch that goes off, and you can set it, and it comes back on. Instead of a fuse, this switch, when your wire is overloaded, this switch just clicks out. And you go set it, and you're back in business. Oh, I don't know. I shouldn't talk about electricity because it's been so long since I had anything to do with electrical engineering that I'm no good. And the same thing is true with respect to heating and ventilating.

You know, air conditioning used to be a very simple thing. And here [large book] is dope on air conditioning that—it'll give you an idea. It's full of charts and tables. And you have to know how to use them. [It] takes a man that is an expert to know how to use those things. So insofar as advances in heating and ventilating, I've mentioned them from time to time.

Air conditioning has become almost a necessity. I was in the Harrah's Hotel yesterday. And the air conditioning was off. And it was hotter than the hinges! It was very disagreeable. They finally got it fixed and got it on, but it took quite a while to get the building back to normal. We have air conditioning in our house here. The other day, it went off; the motor went out, and I want to tell you I wanted that fixed that day. I didn't want to be in here without any air conditioning. They bought a new motor and put it in, the same day.

So we have come to the point where people are accustomed to air conditioning and music. When you build a bank now, you put in public address with music all over the place. Girls can't work without music any more, Kids can't study without music. (I can't study with it.)

Materials—we have come into an age of plastics, and they are making all kinds of

plastic materials, some for building. And for a while, they refused to let them put plastic materials in a building because, in the time of a fire, they made toxic gases. They are now making plastics that do not have those toxic gases and are acceptable for various things in building. Some is for surfaces. They're making very hard plastics that won't scar, practically. And plastics is coming more and more.

I think there must be a—let me see [gets book] —chapter on plastics here in the building code. Now, this is a present day building code, about an inch and a quarter thick. It used to be half an inch thick in 1925, when this code was first put out. This code has, in addition, a book that goes with it, of standards, to tell you the materials which you simply specify by name in a code. This other book tells you that this material has been tested by the National Fire Underwriters Laboratories, and that its qualities are this, that, and the other thing. Its flame spread is something, its strength is something, and so forth. So it takes two rather large books in order to write a code.

Now let's see if they've got plastics in here. There's plastic design and plastics approval and its area limitations, plastics for awnings and canopies, fastenings, glazing of openings, greenhouses, interior finish and trim, light fuses, monitors, sawtooth roofs, skylights, the structural requirements for plastics, even wall panels, exterior and interior. So plastics is a coming material which wasn't even available when I started in business, wasn't even dreamed of. They have a chapter, even, on plastic design. So your building code has recognized the importance of plastics and they're available and used in buildings.

Well, the nails today have increased from the ordinary square nail they used to have, which they drove with almost a single jack, to a terrific variety of nails. They have nails that

are twisted spirally, they have nails that have barbs on them. They have all sorts of nails that cannot be pulled out, they hope. And there are nails for all different purposes. If you want to put a shake roof down, you need a special nail for that. Those nails can pull in a shake roof. They must be the proper length because some of these shakes are as much as three quarters of an inch thick. And at the base where they nail them, they could easily be half an inch thick. And your nail has got to go through and nail into the material below sufficiently to hold them, and then it should have some, oh, surface treatment that would keep it from pulling because these shake roofs will come off in great gobs.

There was one case I was on, when a shake roof came off on a motel at Virginia city. And I had to testify as to whether or not it had been properly put on. And, of course, the minute you say something, why, the attorney says, "Of course, that's your opinion. Now, how do you substantiate that?" Now, I never tested any shakes to see whether they were going to stay or not, but I know what I should do to put up a good shake roof that will remain, and what slopes they must go on.

So nails, the size of nails is myriad, you might say, from the very small brads up to great spikes a foot long. And the types of nails are—well, there's almost an uncounted number of types of nails, in all different countries, too. They have surface treatments of one kind and another to keep them from being pulled. They have various kinds of heads, various kinds of points. And in form work, nails have two heads so that you can drive the first head right up solid against the material. But when you want to take the form down, the second head, you can put your hammer under and pull it. So nails, in shape, size, and form have been developed in great number. The strength of nailed constructions

has been set forth by the Department of Commerce in a publication covering all fastenings for woodwork. And the strength of nails driven into side grain, driven into end grain against a sheer—that is, against pulling—the nail is driven in sideways, and the movement tends to be vertical, then this is sheer [perpendicular]. The nail will hold so much that way. If it is nailed into the side grain and there's a tendency to pull away, then, that's a different strength. How strong is it to keep from being pulled out? If it is driven into the end grain of the wood, this is, again, a different strength.

And then they make timber connectors in which they have a sort of a washer with a ridge that sets into a mortise in the wood. And then a bolt goes through and holds it there. And they connect wood materials with these timber connectors. But the nailings are all set by test. And the number of nails to give you a certain strength, you can figure, but you must drive nails far enough apart so that they don't split the wood that you're working with.

So nailing isn't just a simple matter of putting down a nail and hammering it in. You have to know what you're doing. So, as I say, nails are almost of infinite variety, and it's not something for some carpenter to decide two nails is enough. It should be designed by someone who understands the strength and the types, the qualifications, the properties, of nails. To architects, they send out a cardboard about eighteen inches by twenty-four inches on which there will be perhaps twenty to thirty types of nails made by one company!

I've got to go back now to that brick again, to tell you that most of the ornamental work that was done on the exterior of buildings when they were of brick was terra-cotta. The terra-cotta was polychrome. They could make it in all sorts of colors. You could make almost any kind of a design and color it any

way you wished. There were two concerns on the coast that did it, N. Clark and Sons and Gladding, McBean Now, N. Clark and Sons went broke because it was too expensive to use terra-cotta, finally. Gladding, McBean went into all kinds of conduits and sewer pipe, and things of that sort, that were in demand, and they stayed competitive, and they're still in business today.

Oh, by the way, I mentioned this before. Going back to the use of brick and the availability of the workmen (this was in the '20's—oh, in the early century, from 1900 to 1920), they would do lots of cut brickwork and lots of bond, different bonds—English bonds, Flemish bonds, running bond, that sort of thing. And the example, the existing example of the kind of brickwork it was possible to do is the Cladianos building.

And glass, also; they began to make structural glass, and exterior walls of buildings were covered with this structural glass in a sandwich with insulation back of the glass, and then a Lacer on the opposite side of the insulation for room finish. A great many very high buildings were done with this type of material. One of its advantages was its lightness and the fact that you didn't have to have such heavy steel in the structural portions of the building.

They can actually create—if you happen to have asthma, for instance, they can put air conditioning and filters, and so forth, into your house that will give you no dust and will give you no bugs and give you no pollen. It's a little expensive to take care of all those things, but they can do it. So air conditioning came to the point where they could give you air of an exact weight, hold just so much water, and was completely free of all sorts of allergic materials, materials that created allergies. And that, today, in the big buildings means that you can walk through the air ducts that bring air

to portions of the building, the mains, from which branches are taken to various portions. You can walk through them standing up. And the fans are, similarly, very large, and they have tremendous compressors to take care of their freon. It's just big equipment. And it takes a lot of room to take care of it.

The electrical work has developed now to the point where if you know which push button to stick your thumb on, you can do just about anything you want to by pushing a button. Everything is automatic. In the field of communications, why, that has developed to an astounding point—public address systems, that sort of thing, and telephones, all sorts of wire transmission, radar transmission. In a building, you can have intercommunications of all important parts of the building, and all at the pushing of a button. You can start your equipment at the pushing of a button. And they have now developed switching systems, so that when you push the button, you are only pushing a line that carries six volts. But this small amount of power gets to the switch that you want to burn, and it operates the relay, which then throws real power into the operating equipment. And the switch can be thrown, or taken off. But you are in no danger because there's high voltage, of getting it when you press one of those buttons, because it only [laughing] has six volts.

Hardware has developed tremendously over the years. There's a lot of copying in hardware. They make a piece of hardware that looks like the original article, but it doesn't have the character of springs; it doesn't have the parts; it will wear, whereas the original article has a metal material that will stand up for years and years and years. And they'll use cheaper metals and cheapen that thing. But it looks like the original. And they give it a name almost like the original. Then you specify that hardware. And the bids come in. And this

man, with the make-believe hardware, is low. And he ships in the stuff, and it doesn't have exactly the name. And if you aren't careful, why, you'll accept it and put it in a building, and he's made his profit and beaten a good man out of a job, and you get your head beat in when the stuff goes to pot. That's particularly true with Schlage hardware, which is a very fine hardware for door locks, and all that sort of thing. And there was, and still is, for all I know, a firm who makes a similar lock which is not comparable, actually, and cheaper.

[What part do labor unions play in their effect on me and on my profession?] The labor unions can give you a lot of trouble. If you don't design your building with a view to the skilled mechanics of the various trades that are available, in your area and to your area, the next thing you know, somebody is going to try to do two things. It's hard to get the men up to handle a certain part of a job; they may try to do it themselves. And right then, right now, your job is shut down. You've got a big argument. These business agents for unions, their job is to see that their union people get every bit of the kind of work they handle that's done in their area. Nobody else gets to touch it. And if anybody does touch it, it's their job to see they never do it again. So these business agents are apt to be right on your neck the minute you touch anything that isn't part of your trade union rules and regulations.

They also have jurisdictional disputes (I think I mentioned this) where you have a door, and it's a wooden door, and there's a wooden jamb, and there are steel studs up against the jamb, and there's metal lath and plaster coming up against the jamb, and all of a sudden you have three trades involved. And if one of them does any part of the other one's work, if one of them doesn't do a good job of putting in steel studs, and the carpenter shoves them up against his woodwork and

fastens them, right away, you are up against some kind of a dispute. And often, it is wise, in designing the building, to take up some section where there could possibly be a jurisdictional dispute, which union is going to handle this work, as I told you, for instance, in some acoustical work, when the plasterers wanted it, the painters wanted it, and the asbestos workers did it. That's the jurisdiction—who has jurisdiction over the application of materials. Frequently, you can go to the union headquarters and discuss [it] with the two or three union heads involved and get a solution that will keep things sweet. If they're not mad at one another at that time, they frequently cooperate.

But I tell you, some of these—their job, also, is to get more money, more vacation pay, more sick pay, and less hours of work for their unions. Wow, the plumbers, for instance, they claim plumbing is an art. And I want to tell you, they get the salary of an artist! They've really got themselves up, seven dollars and a half an hour, plus I don't know what all fringe benefits. And it is coming to the point now where everybody is looking for some way to cut down on the use of these highly paid mechanics.

Now, the plasterers—when fire protection began to be quite important and the codes were changing, the plasterers thought they had it made because they could put on their plaster and metal lath and they had one-hour fire protection. But as they began to price themselves out of the market, the gypsum industry came along with the gypsum board, and the next thing you know, you have a fire prevention, a fire-safe application which is in one big board, four by twelve, four feet by twelve feet, and you put it up with clips. And no plasterer can do that; that's a lather's work. And they can paint over that. They don't have to put anything on it. So first, the

gypsum board came along as a lath, which was put on by the lathers in large sheets. And it only took about five eighths of an inch of plaster, where metal lath and plaster takes three quarters, as a minimum—seven eighths thickness, all told. Then they began to make this gypsum board with surfaces such that you could paint them, decorate them, and that was your finished surface. When they first did that, that surface was so soft that you could run a piece of furniture against it and leave a bad dent. Today they have a gypsum board that will take quite a fair beating and stay in pretty good shape. And, of course, it does give you the fire protection that you're required to have.

So the unions have done great things for their people, and rightfully so. They gave gotten them living wages with the chance of saving some money, enough money to raise families, and that sort of thing, in these days of—whatever you call it— inflation. But, of course, it's like the pendulum. It swings over and back. In many cases, they've gone too far. But they have done a very necessary job, if you want to have skilled mechanics.

There's another thing, of course, in the unions. They have a number of people in each union who are past the age of giving first-class work. They carry them along in the union just the same. They do not retire them, because if they retire them, that has to come out of the union fund. So they can then assign them to the easier jobs that come along and to people they don't like. People who have fought the unions may get from the unions a couple of fellows that aren't very good at their job, or very fast, either. And there's nothing you can do about that. Bruce Thompson tried to do it, I know. He did make a little progress.

But in general, the unions have been, I think, a good thing for the working man, where the? haven't gone all out, like with the

plumbers. The plumbers are way out of line. I can remember when the hod carriers had a union. And immediately, they hadn't any sooner than formed the union than they went on strike for a lot more money. That's the reason they formed the union, not because they thought there were any other benefits. They thought they were going to increase their wages. they went on strike, and that meant, of course, that the brick masons couldn't work. Because once you have a union to carry hods, nobody but that kind of a union's going to carry them. The brick masons couldn't say, "Well, we'll carry our own hods," because then they'd pull the whole job. Everybody'd quit. Put up pickets, and you're dead. So the brick masons simply said to the hod carriers, "Look, buster! You go back to work real soon, like, say, eight o'clock tomorrow morning, or you aren't going to be carrying any hods". And that's what happened. They went back [laughing] to work. But they did, later on, get quite a lot more money. A hod carrier has almost tripled his money, I think. It's a very hard work, and it needs no special skills, just good help and a strong body.

But as I say, I think the unions have done a good job in the majority of their activities. And now, of course, they have great war chests, and they've messed into politics, and they're interfering in the civic life of the white collar people quite a bit. It boils down to this, as I see it, that there's so much money in the pot in this country, and so many workers to split it up. Now, if the unions, who have perhaps 20,000,000 members in all unions all together (I don't know what the population is now, but that's a good guess), if they're getting a much larger part of that pot, it's not there for the white collar workers to get it. And also, the white collar workers are not organized. And we'll say there's 20,000,000 union people, 60,000,000 white workers. It may be more; I

don't know. The white collar men, then, go in with their hat in their hand and ask for a raise. The union man goes in and says, "We want a raise, and if we don't get it, you're dead. your operation stops." And sometimes there's a compromise, and sometimes they get what they ask for.

But if the white collar workers were to be organized, 60,000,000 of them, into one union, you can imagine what the musclemen of unionism would do. They'd be in there fighting, shooting, killing one another, trying to get control of the 60,000,000 people for a dollar a week, or whatever it might be—tremendous amount of money involved, a tremendous job involved with a tremendous salary. So whether it is good to have them all organized or not [laughing], this is a moot question I'm not prepared to even discuss.

[What's the architect's role in dealing with the various unions?] The architect has no role, other than, as I have told you, to recognize what can happen as he designs a building, and then, if he sees fit, to go and say, "I have this job coming up and I have to do thus and so. Will I run into union trouble, and if so, how can I avoid it in the design of the building?" That's all. He is just a go-between, that's all.

I had the best of luck. I went down to the union headquarters, and [Harry] De Paoli, I believe, was a president of the state union setup. I don't know what they called it, now. And I'd go to De Paoli and say, "I have a thing here that might develop into some kind of trouble. Can you help me with it? Is there something I can do to improve the situation?"

And De Paoli'd say, "Well, let's see who's involved," and he'd call them in, the business agents, and we'd sit down, and sometimes you'd get an absolute, "No, by God. Bla bla bla." But in general, there was cooperation. They'd say, "Well, if you do it this way, it'll be all right." Or some business agent will say,

"I'd like to let you do it, but my gang would just raise hell. I can't afford to do it." He's got a job to protect, you see. But you get as much cooperation from them as is possible because they don't like to go on strike, either. They like to get what they want without any trouble at all [laughing]. And I'm giving them a chance to get what they want without having any trouble if they will cooperate with me and I with them in the design of the building. So that's about the only role an architect can have.

I did have a role in the construction of the First National Bank building, when the contractor put up one elevator. That's the exterior elevator that they use for construction purposes, lot of pipes. You've seen them. And the plasterer decided that he was going to mix his plaster on the ground and take it up in wheelbarrows on the elevator.

Well, when he got on the job and started plastering and his boys were waiting almost for every elevator to shove a couple or three wheelbarrows of plaster on there, the other subcontractors, "they wanted to take up lighting fixtures or gyp board or lath, and various things they had to do in their business, found themselves without an elevator in a sixteen story building. And there was a real row which developed in that they were just about to stop all construction 'till we found out what we were going to do with that. What they wanted the plasterer to do was to mix his plaster on one floor (we'll say, the sixth floor or the seventh floor) and put in a big pump, and pump the plaster up four or five floors and pump it down four or five floors, which is a normal way of doing it, but a little more expensive than using the wheelbarrows and unskilled labor. It finally worked out that he mixed his plaster, and so forth, in the middle of the building [a] couple of places, and that he—I've forgotten—he didn't put in a pump. And also, they worked, they ran the elevator

on Saturday to let a lot of subcontractors get materials up for the next week, and unload them at the various floors where they were to use them.

But I was in that discussion because I knew almost all of the union people involved well and favorably, and all I did was sit in there as a sort of a catalyst. I could say, "Why don't you help him," or what have you. That's about all. But that was my involvement there. And we did work out a satisfactory—wasn't satisfactory, but we worked out a use of that elevator that the contractor would go for (because it cost him quite a little extra money, too) and that the subcontractors could live with, although it did cost them a little money; it cost everybody a little money. But they wanted to make damn sure that everybody had to spend as much as they did [laughing].

So that, as far as I know, is the architect's involvement with unions. He's not very important in any way.

Well, let's see. What have I missed in materials of construction? One thing I haven't covered is the great amount of prefabrication that is being done in connection with buildings, building portions of the buildings such that they can be fitted together on the site. And this is much more economical than shipping them all, knocked down, to the site and taking whatever labor is available and trying to put it together. You're working in your plant with skilled mechanics who do that all the time, and also with equipment which is designed to accomplish only one purpose, and that's your particular equipment. So that has come to pass, and, of course, duplication as much as possible in structure.

So, as I say, architecture has changed during my career. The styling and design have changed almost from log cabin to early computer [laughing]. They do a great deal of building with the assistance of computers

now. And an architect today has to have so many skills that one small head just can't hold 'em all. And I bet if you were to program a computer to produce an architect, it'd come out with three men. There's just no chance of one man being an expert in all of the materials of construction and in the methods, and that sort of thing, that are in use today.

I've done all of it. I've done all of it; there hasn't been a question of adaptation. It's been a pleasure. It's been wonderful to have these things come along. They're a great help. In addition to this, don't forget that these companies are manufacturing materials with the idea of shipping into the job and letting them be installed. This is, in effect, a lot of prefabrication, too. Their instructions are complete. When you get the materials of one kind or another, you have instructions that tell you exactly what to do. Frequently, they will send out men from their factory and inspect what you have done. And if you've made a mistake, they pick it up for you. Oh, there's no adaptation to these things. We look forward to them. They've made our work easier, and they made our buildings better. They also gave our clients a much more flexible building for their purpose, which helped us, too, in addition to which, it shot a lot of designers and contractors out of our business because they couldn't make the grade. They weren't up to date.

One of the things that we more and more had to know about was the market, what is being made and sold. And is it available here? And if so, how long does it take to get it? And will they service it here? Now, service, today, is a particularly valuable thing with the kind of equipment you have today, because if something goes wrong with a particularly complicated piece of equipment that weighs about forty tons and costs [laughing] \$100,000, who's going to walk up there and say, "This is

what was wrong, or that's what was wrong." You need a man from the factory who knows. So if that service isn't available, such as buying a lot of equipment that's manufactured in New York and having it shipped out here and put in buildings out here, then getting into some trouble which New York decides it was your fault anyway because you're so dumb about their equipment, and they aren't going to spend any money coming out because it was your fault, that don't do you a bit of good. But if you have people in Sacramento, and your equipment needs service, why, they can protect their reputation and their equipment for a very small price. And they send people out as fast as they can to make sure that you get first-class service.



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## SUMMARY OF ARCHITECTURAL CAREER

Well, this morning we were going to talk about three architects. And I can't think of anything too interesting. When I started practice, of course, I have told you that I was not registered, and there was no regulation of the practice of architecture in the state of Nevada. People thought that contractors built buildings and the architect was a sort of window dressing; he was not a necessity at all. Also, I could do my own structural engineering. Today, you must have a structural engineer whose "registered" seal goes on your drawings. I did my own heating and ventilating because it was largely a question of buying a floor furnace, for instance, that said it'll heat five rooms, and so you bought a floor furnace and put it in. and there was your heat. If the kids were warm enough on the floor, you had headaches because the heat was so hot at your head height. Then we came to one-pipe steam jobs, and we also came to one-pipe water jobs with radiation. And that was simple to design. In those days, a lot of technicalities that are now taken care

of are bypassed. You got by with what was done at the time. It was customary, routine design at the time, and you got by with it, and you thought it was pretty good because it was better than anything you'd had before. And then, of course, you came to two-pipe steam with a vacuum pump to bring back the condensate to the boiler so that it couldn't run out of water. And gradually they began to come into air heat by ducts, by a means of ducts and fans. And this led, of course, to air conditioning. And rather rapidly, at that time, which I should say was about 1945, heating ventilating just got completely out of hand, as far as any layman who could sit down formerly and get by with what was usually done in his area. He wasn't competent to do that work anymore, so heating and ventilating engineers came to the fore, and they, also, had to be registered.

The architect, then—as these things came along and became more complicated, the contractor found that the buildings he was putting up without this special help were not

doing the job, and people were dissatisfied. So the architect began, then, to become more and more to the fore.

When I did the State Building (that was where the Pioneer Theater is now), I did my own structural engineering for that building. But my heating and ventilating was outside of my ken, and I had to have a specialist do that for me. So there was one of the first breaks in the practice of architecture, when you were able to do almost everything yourself.

Inspection of the architects work—when I started, inspection was a rather minor part of your work because there was just one way of doing things; there were just certain mechanics that could do things in your area, and that's the way it was going to be done. And there was also some pride among mechanics and workmen and contractors in doing a reasonably good job. Men like Joe Dillard would do a good job if it cost them money. If they lost some of their profit and some of their own cash, they'd do a good job in spite of anything. We don't have contractors like that anymore. They've come to the point where, to do a good job, it's costing them money, and they immediately want an "extra". They have a different attitude, that they feel that the public thinks the contractor should give them a bid on some work to be done and then he should do the job, and they do not provide him with a complete set of plans and specifications of what they want and how they want it done. So they sort of think they can go through the job and make up their minds later. After the man has said it's going to cost so much, they can put something in, and it'll cost him \$10,000 more, and they expect him to do it. But today, they don't do those things. And you make a change like that, the contractor's so tight that you have to pay for it. Somebody has to pay for it, or they don't do it.

Well, there was this first break when I couldn't do heating and ventilating but could still do structural work. In that building that I had just discussed [State Building], the acoustics were so bad that it was very hard to hear. And we had not at that time—now, I've forgotten when that building was built, to tell you the truth; I think [it was] about 1927. it cost \$210,000, I remember. Oh, maybe it was \$200—anyhow, what's the difference. \$210,000. and we didn't have acoustics as a science. And we didn't think too much about it. So here's this big hall we put up there with it's balcony going way back up into the top of the building, and it was very hard to hear and understand anything that was said. The reason for that—I think I've explained acoustics before, how it bounces around and your ears keep hearing it for a fraction of a second, enough to fuzz it up.

So the ultimate thing—while I'm discussing that—the ultimate that happened was that some years later, the county commissioners asked me to correct the building acoustically. Now, if that was '27, this must've been six or seven years later, anyhow. I think I told you about this, where the various trades came in and were going to do the job. The outstanding people in acoustic work at that time were in the Western Asbestos Company of San Francisco. So in order to do this job, I had to get them to tell me how to do it and what to do and how much to do. And then they sent their crew up, as I have told you to do the job. This was the first acoustical correction that I did, and I think it was about the time that people began to think in terms of better hearing in public assembly rooms. So the architect, now, has gotten to the place where he is beginning to need consultants in the realm of heating, in ventilating, and in acoustics.

I almost forget to tell you that I also did my electrical work. When I first started out, I was

taking electrical engineering at the University. But electric work got way out of hand very rapidly. All kinds of gimmicks came in. We have today the gimmick of touch plates that operate on very low voltage. You couldn't get a shock out of them to save your soul. And the switches are thrown by coils, wire coils, that are activated by this touch plate system at six volts or twelve volts, which releases 110 volts of power into the coil that throws the switch. And this is elaborated and elaborated on until one push button can put a whole building into operation, if it's properly wired. And electric wiring is very complicated. And the wiring of controls in a building has come to the point where the electrical contractor frequently can't do it. He has to have a specialist do that wiring of controls. Because [if] you get a control fuzzed up, even one control, this may affect four or five controls. It might even have your motors reversed, blowing air in instead of out. So that, again, we came to the point where we needed a consultant. Now, this, we'll say is around 1930, [that] I've gotten to, with this condition existing.

It's when I did the—1928, I guess, when I did the high school in Vegas. At that high school, I had an electrical engineer for it, and I had a heating engineer to do the heating for it. I did the structural, still, for the Las Vegas High School. And the inspection for the Las Vegas High School was beginning, then, to get a little rough. Now, I told you about the inspection that they started. This was the beginning, in Las Vegas (and about the same time Reno had approximately the same thing), beginning of city inspection of work. And, of course, they didn't have real inspectors. They had just started with somebody, probably. And they had an inspection job, and they got revenue for it. The depression, then, of course, came along, and architects were working with anything they could get, a lot of them, because

business was certainly curtailed to the point where nothing was done.

I'll tell you about Cooper's apartment. Cooper, he was the mayor of Reno, and he had an apartment house over on Hill Street and another one of those corners over in there, and he wanted to make five apartments out of it. He had some money. His money was in a bank in San Francisco, although he was the director of the Washoe County Bank, which went ka-flop. But all of his dough was in a big bank in San Francisco. And so when he started to do this apartment, we made five apartments out of this home of his. And Joe Dillard did the job. And Cooper went down every Friday and picked up the money he needed to give Joe Dillard the pay for his help, brought it back. Saturday was pay day. They worked eight full hours, six days a week, and they worked for three dollars a day, and there was a line of men. Fifteen, twenty men were there. And they got in a line because nobody was going to let anybody get ahead of him if there was a chance at a job. Even a laborer's job. He was going to be where he was when he got there. They lined up. Joe built that job for almost nothing. [In] comparison with prices today, it was nothing. And I was the architect for the job. That's one of the very few jobs I had during the Depression.

Well, anyhow, when the banks went broke, I had no money, and I had used up most of my money paying office rent. I gradually quit subscribing to magazines, and what have you, hanging on, and I finally went out and got a job. And I've told you about that. That terminated in the highway department, when the building inspection in Reno, with the starting to practice architecture again, and being back fully practicing architecture in 1945, which had ended, also, a great deal of my active participation in the uniform Building Code organization. In 1945, I took a two years

leave of absence from the building inspection work, and just did architectural work. And by the end of the two years, Lord, my architecture practice was booming very nicely, and I didn't want anything else.

But at that time, I began to get larger buildings. Buildings have kept increasing in size and in complexity and in height, particularly in height, because the cost of the ground kept going up. And if you were going to pay the extra cost of the ground, you had to have more building to rent to help pay for it. And then, too, the population was increasing, markets were increasing in size, and the size and complexity of the suppliers in this area was greater and greater.

And about this time, too, that—well it was just before this time that I, as a member of the Planning Commission, tried to get them to set aside industrial ground to bring industry to Reno.

Well, 1945. In 1947, the school board called me in and asked me to do Reno High School. They had \$1,000,000 to do it, and when we outlined their plans—or I outlined their plans for it, I told them that they had a job which would take anywhere from \$3,-\$4,000,000. They laughed at me and cited a school in Utah which had been built for \$1,000,000 and which included most of the things they wanted in this new school. However, these were reasonable people. You could prove your point. And when you did, they would accept it. And I proved my point. But I also found that I had a \$4,000,000 school to do and a deadline to meet doing it. And I had no draftsmen. I was still the architect who was doing most of his work himself. And it was at this point that Graham Erskine came to Reno for a divorce, and called me up to see if I needed anyone to work. So I talked to him and found that he had a doctorate in architecture from the University of Rome at Perugia. He

had worked for a very large firm in New York City and had quite a bit of experience. And he was just what I needed. So I took Graham to work and I got a couple of other boys to work at that time, then, I wrote the specifications for the high school, all of them, something that I can't do today. Graham took care of most of the work in the drawings with the draftsmen that we hired.

It was then that we began to see some of the complexities that had arisen gradually around the country (and Reno was a little behind because this is a small place), and found out the amount of work we were going to have to do and the fee that we were going to have to get to pay for it. We couldn't pay for it on the fees we were getting. They were doing schools for five percent in California, and this board thought I should do that school for five percent here. And I refused. I told them that I had to have eight percent, or no dice. (Not just that way, but this was how it had to be.) I had to have eight percent, because at that time, the structural engineers (and I had to hire a structural engineer) were charging two percent of the cost of the building for their work. And I had hired Hal Engle, a graduate of the University of Nevada and of a university in Stockholm, Sweden, with a master's degree in structural engineering. I had hired him as my structural engineer, and he had a two percent fee. We also found that in a building the size of this high school—and you understand that the Reno High School my father had built in 1910 was still the high school in 1945, and completely inadequate in staff and in curriculum and size—in every way.

So suddenly, we have a building, a rather complex operation to put into a building.

Well, as a result of that high school job, and this being the first experience with a rather large and a complicated project that I had had, I realized that I couldn't any more

handle these entire jobs, that I had to have one of two things. I either had to have a larger office with some extra people in it, or I had to have a partner. If I had a larger office with expert people, I had to continue with jobs of that size, and they weren't available. If I had a partner, he'd have to take the ups and downs along with me. So at that time, I gave Graham Erskine a junior partnership with inc. And we were able, then, to—I then specialized more in inspection.

And getting back to this inspection, as these buildings became more and more complicated, and as heating, ventilating, electrical work, air conditioning, structural also became more complicated and of greater size and importance, it became necessary that inspection be provided for all of these various departments of the building, and provided at the time when you could see what was happening before a contractor got it built and then said, "What am I going to do? It's all done. Why didn't you stop me before? If you want it changed, you'll have to pay for it." This is the sort of thing that you would run into. So this inspection began to be more and more important. And as time has gone on, inspection has now come to the point where an architect who provides a material with certain manufacturer's guarantees, which does not perform according to the manufacturer's guarantees, has been held liable to have tested that material to see if it would do what the manufacturer said it would do. This has thrown quite a kink into the practice of architecture. Some architects have gone broke.

The change in costs—that is to say, the unions who more and more are breaking down the construction practices so that this union does a smaller and smaller part of the work, the next union does everything, and that line between them is never crossed

without trouble. You don't pick up—I picked up a bender, a conduit bender in Harold's Club at the request of an electrician who said, "Would you take it down and give it to the guy downstairs?" I picked it up and took it downstairs, and fifteen minutes later, the business agent was in there wanting to know what in the heck I was doing handling tools. And he was going to pull this job if it ever happened again, just threw his weight around.

Well, this came to the point where I remember on the Reno High School where I had (and I told you about this)—the doors were wooden, the frames were steel, the metal lath was steel, and the plaster. Well, there were three trades involved in a door. And how to put them together without getting one jurisdiction mad at another one was a little bit of a problem, so I went down and settled it with the unions before the job was done and while 32 was designing. And they accepted, "We'll do it this way," and that's the way I designed it. And we had no trouble.

But these jurisdictional disputes, that is, what union has jurisdiction over what kind of work and tools and the teamsters bringing stuff just so far and somebody else unloading it, or what have you, all these things have tended to raise prices to the point where architects, on some jobs where there was a considerable amount of tension between unions, found that the price had to be raised very considerably, and his estimate was no good. Now an architect comes up with an estimate, and there is a budget. We'll say the budget was a million dollars; the architect's estimate's a million dollars, and the bid price comes at \$1,200,000. And the owner says to the architect, "How come? I don't have that \$200,000. I can't borrow it at a bank. I borrowed everything I can borrow." That's what he's going to tell you, even if he could borrow a half a million at the bank.

And you try to find out what comes, and you find out the contractor says, "Well, look. I couldn't take a chance on this. When I got my costs all together, I had to put five percent on that part of the job. And da de da and da de da and da de da," The next thing you know, he's got quite a few little percentages that he added to take care of expenses which he was afraid might happen.

In some cases in this area, architects who have a reputation for being particularly unreasonable and demanding and arbitrary, contractors add to their overall cost to take care of expected costs that they'll run into when this architect gets throwing his weight around. The other day, a contractor who was bidding on flooring for a job said, "This is so-and-so's job, and," he says, "I just put ten percent on my estimate when I got all through."

I said, "on how much of your estimate?"

He said, "On the profit, the overhead, the cost. I put ten percent on my total estimate. And," he said, "I just might need it." He said, "If I don't need it, I've got a hell of a good job." [laughing]

Now, that's an attitude that you run up against. And the architect who is \$200,000 over runs the risk, if he can't get that job down satisfactory to the owner and within a million dollars, of losing his entire fee, and then maybe being sued besides. More and more architects are getting sued, so that it now becomes a good thing to do to hire, for a quarter of a percent, I believe it is, a firm to make an estimate of the cost of your structure. And this we are doing, for instance, with the legislative building, and We're doing it with the educational building at the University. These people will take off the materials, and they will give you a broken-down estimate which you can see for yourself, how much material. And they'll be right with the

materials. Then they have the prices; they have the right prices for people in this area. You can take those estimates and check with contractor friends and say, "Would you use this price?"

And he may say, "Yes," or he may say, "Well, now, there's a little thing this guy didn't know, and I have to get more than that." So that you come to the point where you have a fairly close estimate of the cost of this project that you're designing before it goes to bid with contractors.

You then say, "This is very close. The budget's a million. My estimate's a million. I can't go with that," So you put the job out with some sections of it as additive bids. And so you put out what you are sure will be a \$900,000 base bid. That is, the lowest possible bid you could get with these things cut out would be \$900,000 according to your estimate. So you have eleven percent of leeway to take care of these things the contractors might do.

Now, if they come in with a \$900,000 bid, then the additives, they've also bid on these various additives that bring it right up to snuff. Each one, they'll add so much if they do that much more work. So then, if you can get all those additives in for your million dollars, fine, you do. And if you can't, you take those additives that your owner wants you to take to keep within the money. And then if he wants to raise some more money and go and do the rest of it, okay. You don't have to put it up. You get out of line, he wants you to put it up.

So this thing we also have to do today: we have to get experts to give us an estimate of cost in order to protect ourselves. We have to carry insurance on ourselves. If we have inspectors in the field, the insurance on their work is the same as the highest cost of insurance for labor with the Nevada Industrial Commission. And they come in, check our books, and they want that insurance. We have

other various sorts of insurance we have to carry nowadays. we must carry insurance, health insurance and accident insurance, for our employees. We have to pay for our employees' Social Security, and we have to pay unemployment compensation, We have to pay that. So we have the Nevada Industrial Commission. We have our own health insurance projects. And another thing we have to do, if we have to fire a man for some reason and he goes on unemployment, our unemployment costs are raised on us the minute you fire somebody for good reason. They don't ask you what the reason is. You fired him, and it costs us money, and you've got to pay it.

I had a man quit me here. He went down to Las Vegas and promptly went on unemployment compensation. Of course, he could've done it here. But that was what he was going to do. He quit work, and for no particular reason. He wasn't mad at anybody. He was an elderly gentleman, a draftsman. He quit working. Next thing I know, he's down there on unemployment compensation, my costs went up.

So here is the architect. He started doing all his own work, with no income tax. And suddenly, he finds himself with the necessity for additional principals to handle parts of the work because one man can't know enough to handle all these departments. He finds himself with the necessity of a rather elaborate office. The catalog files must be so complete and so well done that you can grab any catalog you want, almost, between two fingers. You can't be hunting catalogs. And you must have catalogs to design. The materials market is represented by your catalog file. And, of course, your personal knowledge, sometimes, is rather large, too.

And you have, now, coffee breaks in the morning and in the afternoon. We have fifteen

[laughing] -minute coffee breaks that really are about twenty-five minutes, morning and afternoon. And they're worth a couple or three hundred dollars a week in cost to us. So we have, also, greatly increased salary costs, largely compensated for by the greatly increased building costs, because we do a percentage business.

So we start out, and we hire a draftsman at approximately twice what we used to pay for his base pay. We pay Social Security on him, we pay Nevada Industrial Commission on [him], we pay health and sickness insurance on him. We give him two weeks' sick pay. We give him two weeks' vacation pay. We give him two breaks each day for coffee. And ourselves, the principals, we have to put up a good chunk of money for Social Security. And we have to carry our own personal insurance (which is done largely by the firm), loss of business insurance, the death of a partner, all that sort of thing, providing money to take care of paying him off without hurting the business, and all that sort of—. These costs have come to the point where the modern architect's office, now, is pretty nearly a computer-run deal.

If he has a big business, he has to have several principals in architecture, and sometimes he has a principal in structural engineering, or two principals in structural engineering. He has heating and ventilating men who are registered men and are partners in the firm, sometimes, He has to have specifications writers, and these are a separate deal altogether today. The specification writer has to know a market that must be. ten times the kind of market that I had to deal with, in the complexity of materials, and all that sort of thing.

The spec writers have to have almost at their fingertips a knowledge of the materials available in their area, and by their area, I mean in their section of the country. If

an architect specifies materials that are manufactured in the East, we'll say, why, the East people, who have an area tributary to their factory, are supplying that area, and you come along and want a bunch of their stuff, you may get it six months later. You do not get the service. You cannot get service on materials that come from New York City. They aren't going to send people out here to service their materials. And servicing of materials is more and more becoming an important part of building. When you put something in that has movable parts, that has electric wiring, and so forth, there must be people available to keep it running. So the specification writer has to know what materials are advantageous in his area and what those costs are. And when he writes the specification, he usually has to include a specification that would permit three manufacturers, different manufacturers, with materials of different characteristics—generally overall the same material suitable for doing the job, but with some different characteristics—who might bid on this job in competition from one another to the contractors. He has to know the contractors' practices. He has to be well aware of the subcontractor's organization and their rules. They have an organization to protect themselves against proselyting by the general contractors. He must know all of these things so that he could come back to the designer of a part of the building and say, "Look. This is going to be almost impossible to get the materials without a delay, and certainly impossible to get service on them, and besides which, this is a very costly material which you don't need in this job. And would you change your drawings to do so-and-so?" This specification writer is a man that is almost a supervisor of the drawings that are made in the office, in respect to materials and service and price, and that sort of thing.

So he has a specification writer or a department. And that man has the catalogs of the office in his area and at his fingertips. And usually, if you need a catalog in order to get the characteristics of some material and its measurements and installation procedures in order to draw a plan, for instance, to make a plan of an air conditioning room, fan room, when you make a plan of a fan room, you could have so many great, large ducts flying around that you'd have to have stairs to get over them. on the other hand, you might be able to install the equipment so that you can walk around and service them. That's the sort of thing that the specifications writer has to add to the fact that he just writes a paragraph that says, "You put in such-and-such lumber."

Now, he has to know the manufacturing characteristics and peculiarities of art industry in order to write specifications so that he's going to get the thing that he specifies, instead of some substitute which takes care of the way he specified the job, but not what he wanted because he didn't completely say it. So here we have a situation coming that architects feel they must have larger and larger offices, that they must have more and more expert personnel, more and more specialists available and under their thumb, subject to their direction.

We have architects now, who, instead of practicing in their home area, due to the fact of chain stores and all sorts of national and international concerns dealing in large areas of the world, and they hire an architect in their area, who begins to be a specialist in their business, And they want to build, then, facilities in various parts of the world, and [if] he is to do this job for them, he's got to know foreign countries, even. Re's got to know what he's going to run up against, whether he can bring workmen into foreign countries, even, before he designs the job.

[This applies to] states, between states, and between sections of the country. In the Northwest, lumber is available in all ways, tremendous, large sizes of lumber, the glued lumber, plywood, veneers. Almost anything in lumber is available, and your designs, then, are going to feature, to a great extent, lumber. Put you go down to Los Angeles, they don't have any lumber. Your designs are going to feature reinforced concrete and steel and various types of synthetics on walls, and what have you. You go to Denver, and you have a place where they have neither timber, nor are they very concrete-oriented, but they are strong on brick and concrete block and cinder block, and all that sort of thing. So they have a material market and a use of materials that's rather peculiar to their area. You go down to Florida and Louisiana, in the southern pine timber district, and you, again, come into a lumber area, where the steel people many years ago wrote a building code for a southern Building Officials Conference that was oriented toward steel and toward light steel—in a timber country. And it created quite a furor for a while, trying to get the things organized, but this is a timber country again. And you come back up to New York and the New England [section], and they are just loaded with all kinds of manufactured articles—synthetics, plastics—everything you could think of. Glass, Structural glass (is) used to a great extent there. In the Midwest, the American Association of Building Officials, they have another set of requirements. When you get up to Alaska, you have the hoarfrost, or whatever they call it, the deeply frozen ground. And you have, again, a different problem, different requirements for materials, routines, and for mechanics.

So the architect who represents a large company now, doing business worldwide, or even nationwide, suddenly needs a much

more complete and complex organization than he ever needed before, because he's going to be called on to do a great many different kinds of jobs in different areas.

Transportation also has a great deal to do with the materials you may select and the people you may use. You find that if you have to bring people fifty miles from an adjacent city in order to do the work on the job you're doing there, all of a sudden, they get portal-to-portal pay. They get paid for their travel time. Maybe they get paid overtime for it; don't know, then paid for the time on the business and going back. Now, that all has to be done in their seven-hour day or their eight-hour day and their five-day week, or whatever it is. If you don't do it in that, you're immediately up against time and a half. When an architect who's designing a building has a budget, he has to know that.

Another thing (and I've told you this) that is coming into practice is the design of buildings by means of computers. They take into account many of these things that I've been discussing with you—finances, mechanics available, the population and its change, and all that sort of thing. And they come up with some answers (and I don't know how they do it, but they use them), and this dictates the kind of a building and the size of the building, dictates a great deal about the building that will be built. And their architect, then, the owner's architect who uses this computer information, comes to an area like Reno and says to me, "I want you to do," we'll say, "a Holiday Inn." They do computerize the inns.

"What will you charge me?" Here is a preliminary layout that's practically complete. You don't—very little work to do. "What'll you charge me?"

Fe tries to beat you down on your fee because he says he's furnishing you with a

lot of data free of charge. And if you take it, you'll lose money. So he comes in here, he gives you this data. You do the plans and specifications. A local architect builds it, and he's gone someplace else and designs seven more of these things in the meantime and got architects to do it. So you can see. I think I have covered quite a large difference in the practice of architecture and the reasons for it today.

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## CIVIC AND FRATERNAL AFFAIRS

When we came back from the service, several of us (this was in 1918) got together and organized the United Veterans. This was a forerunner of the American Legion, which, almost at the same time, was being born in Paris. And the next year, I think it was, we abandoned our United Veterans organization in favor of becoming a part of the American Legion. The name of our post comes from barrel Dunkle, a young man, the son of the county treasurer, Dan Dunkle, who was killed in World War I. So we became barrel Dunkle Post No. 1. At the same time, there came into being the 40 et 8 organization, which was a “fun” organization of the American Legion. And as a matter of fact, it was pretty rough fun part of the time.

I was very much interested in the American Legion at the time, and so I went through the various offices and became commander of barrel Dunkle post. From there, I went to district commander for the American Legion of the northern district. And that’s as far as I went going for state commander. By that time, I was a little bit—I’d had quite a bit of

American Legion [laughing] work, and I didn’t want to go that far, although for a good many years, I participated in the statewide American Legion work and their politics, which grew with the years. Jim Scrugham was very active in the American Legion and was present at all of our conventions, yearly conventions, when we elected our state commander and discussed the election of the national commander. I think Jim Scrugham was at one time the national commander, although I’ve forgotten whether he was or not. Most of the things that occurred are just silly.

The Legion politics were usually a contest between the Las Vegas boys and the boys from the north. And there was a great deal of jockeying around, trying to get the representatives from other parts of the state to stand with us. And I remember we had a convention in Elko (and I don’t have dates for these things), they were running a man for state commander, and we were running Vein Hursh for state commander, I believe. That went on for three days. And at the end of three days, everything was tied, tie, tie, tie. We

got a man from Elko to change his vote, and we won, by one vote. And our man became the state commander. Those conventions, at times, got to be quite bitter. And after it was all over, everybody forgot about it, seemingly, until the next year.

We had a convention in Hawthorne, and Jim Scrugham, who was quite prominent in American Legion for a long time, was down there with us. And we had a similar fight about a Las Vegas man and a Reno man. The details of that thing, as the election, I have forgotten. I remember one thing: Ted Withers was a very prominent Legion man, and very active. And at the conventions, he was also a very persuasive talker. And we would get a room for ourselves and get Ted in this room, and he usually had [laughing] a drink in one hand, and we would parade by him the people we were trying to get on our side for votes. And he'd talk to them. And he'd be—I can still see him, leaning against the end of one of these beds, these old-time beds, that had a high foot piece, with a drink in his hand. And we'd bring in the next guy, and they'd "Bla bla bla," they'd talk around—maybe we got the vote and maybe we didn't. I think we lost it there.

I remember Jim Scrugham took a cabin, right down on the lake in Hawthorne, and this was our headquarters. And we came down there, the only thing they could get for liquor in those days was gin. So they had gin and ginger ale for drinks. And Scrugham was always trying to get me to sing at this [laughing]—at this place. I didn't want to sing. I wanted to play poker. And I was sitting in a poker game, and Scrugham bought me a drink in a tin cup (and the tin cup, I mean it must have held a pint or more; it was a big one), set it down alongside of me. I found out later his idea had been to get me high, and then he'd make me sing.

Rut Scotty Harrington (laughing), who was playing in the game alongside of me, he casually picked up the tin cup and ultimately drank its contents. Well, its contents were straight gin, nothing mixed with it at all. So he must have drunk pretty close to a pint of straight gin, in a rather short time. And it was very shortly after that, that in a stud [laughing] hand, with two aces in sight against him, he called a five-dollar bet, which was a tremendous bet in those days. He called a five-dollar bet with nothing. Why, sure, he called it. [Laughing] He really got high! Well, he couldn't do that in stud poker, because he was beaten, in sight. He got his five dollars back, but those were the things—.

I remember we found some rattlesnakes close by the place, in a hedge. And these idiots were down on their knees trying to get these snakes out so they [laughing]—. Nobody got bitten. But I don't know why they didn't get bitten. These were professional men, too. They were a little bit nutty.

Well, the Legion conventions were largely fun, and the politics, as I say, were completely local to the Legion, until, I guess, Molly Malone became state commander. And at that point, there was some attempt to inject politics into the Legion and get a solid phalanx of Legion voters behind Malone. I don't know—don't remember how successful it was because I was phasing out of my Legion activities at the time. So he became senator. I don't know how much the Legion had to do with it. But in general, I would say that the American Legion was not in state politics at all.

[What about the connections with the national Legion organization?] Yes, we had a representative whom we elected to go to the national conventions. I think Molly ran for national commander. He made a run for national—. And at that time, I suppose a

number of the Legionnaires went with him. I didn't. I don't recollect just what happened because, as I say, I had phased out of it, and I wasn't interested in Mr. Malone's politics, particularly. So that's about all I can tell you, except to say that I don't think the American Legion was involved in state politics to any degree. [In spite of Mr. Scrugham and some of the others?] No, Mr. Scrugham might have been trying to solidity a little voting bloc; I don't know. I voted for him anyhow. I think the American Legion was simply one of the organizations that he frequented partly because he was a politician and partly because he was a Legionnaire.

I thought that Jim Scrugham was a great guy. And as I think I've indicated from time to time, he was my very good friend. I think I'll tell you about the night he was elected senator. Well, the night he was elected senator, Scott Harrington and I were down looking at the returns, and so forth. And when it was more or less decided that Jim had been elected, we went over to see him. And Jim, at that time, owned the Nevada State Journal. That was located on Center Street, between First and Second. And I had remodeled those premises for him and made an office, I remember, for him, with a big fireplace in it. He had to have a big fireplace. So we went over, and he was still there. And as I say, I was rather close to Jim Scrugham for a long time. We congratulated him on his election, and he said, "Come on, I'm going out to the house, and we'll have a drink."

So we went out to the house, and he had two specialties. One was called a "Pahrump wildcat," and the other was his mint julep. So he made us a mint julep and a Pahrump wildcat, and we got home about five o'clock [laughing].

But I remember, alongside his bed, that he had a chair on the right and a chair on the left, and both chairs were piled high with

Congressional Records that he'd been reading in case he got elected. And I don't know what else he had been doing to familiarize himself with the national politics. Rut the man was brilliant, he was a very hard worker, and he did many things.

One of his pet projects was the Valley of Fire, where I think he finally had a cabin of his own down there. He did a lot of work with getting a park down there.

[What sort of a need do I think the Legion fulfilled for these veterans that it doesn't seem to be doing now?] You see, in World War I, there're a lot of us, like me, for instance, that were not going to be drafted. We thought that was going to be a little bit of a taint, We were going to enlist. Today, the only practical way of handling induction into the service is by draft. Enlistments, I think, are a very small part of it. And the attitude toward the war was one of patriotism, one of eagerness. There'd been no wars. Nobody knew what war was like. War was a little romantic in those days. They found out when they got over to France that war was mud and blood and guts. But in thinking about it, it was a romantic sort of a thing—go fight for the country. And also, in the back of their minds was the fact that they'd be over in Europe and they'd travel around quite a bit and see things. And when they came back, there was still this attitude that war was a great thing, and they had been in there, and they did their bit, and they wanted to talk to the guys that had been in it. There was a brotherhood of veterans. And it wasn't until the Legion got fairly numerous here that some of the boys decided, "Well, now, just a minute. A lot of these fellows never got out of this country. And they're calling themselves veterans. And we went over there and we fought, and we are veterans. We'll have the Veterans of Foreign War[s]." And so, there was a division then that came in, between the

men who had actually been in combat and the men who had been in the service but had not been sent over for combat. This was the first sort of rift in that idea of these boys, that war [was] something that you rushed into, and you were a hero [laughing].

Well, as of today, you can see what they think about it. The men who are going to have to fight, they think it's useless. They don't think it solves anything. We've had two wars to end all war, and we find that today, we have more wars going than any time in the history of the world. People, they try to resolve their differences with force. And we're doing it in civilian life, So there is a complete change of attitude.

I can remember at a Legion parade—or a parade, anyhow (it may not have been Legion)—and I was one of the spectators, and here was a guy standing alongside of me, with his hat cocked off to one side, a cigarette dripping out of his mouth, and his hands in his pocket, and the flag came by. Well, when the flag came by, I want to tell you, we got up on our hind legs and we saluted it. And here is this so-and-so, standing there paying no attention, and I hit him in the mouth, He stumbled and fell down. And everybody was perfectly willing to jump in and help me if I needed it. They thought that was what this fellow should have. Well, if you hit anybody in the mouth today, there'd be nineteen hippies on you) This is a big change in the attitude toward the flag. you know, I wrote something to the flag that will just tell you what I thought of it and what we thought of it. Maybe I can find it right here. [Consulting papers] Here it is. Just for fun, I'll read this to you. I think it shows what our attitude was as compared [to] today. This was for a Shrine ceremonial, and they always have a tribute to the flag. And I said,

As we pause in our proceedings  
to pay tribute to the flag, I think we

all feel that the real tribute is not in the spoken word of any man. It is in our hearts and our thoughts, each to his own. The beauties we see in those stars and stripes are not alone a figure in color and motion. They are, rather, the beauties of our way of life. We love our freedoms, our prosperity, and our security. And we revere the memory of the men who fought to keep them for their own and future generations. As individuals, the flag is all things to all men. To veterans of all the services, it brings back memories all their own. To bereaved home folk, it has a special and very tender meaning. And it is a symbol of security to those who plan for their declining years. To each of us, it has a peculiar and personal significance. And because it is there for us to see, we are better able to meet our problems with courage and determination. But times are changing. The old order of man to man, enemies that can be seen, and the protection of our rights and our possessions by force—that order is passing. Resort to force will soon mean utter ruin without victory. New problems must be met, and there is among us a growing number of organizations, some economic, some subversive, and some even criminal, seeking to impose their will on all who oppose them. And insofar as they are successful, they take away from the sum of those things for which the flag stands as a beautiful symbol. Most of us are tired of war and uncertainty, and we'd like to sit back and live our lives in the way we think is best. But if we don't alert ourselves to the raids being made

on our way of life, the symbolism of the flag will be undermined and its meaning dimmed. As individuals and as communities, we must put our minds to seeking an awareness and a solution of those problems so that the flag may retain its beauty in our hearts as in our eyes.

Now, there is an attitude just at a time when Communism was coming. I don't have a date on this, but it's got to be in the early '50's, I think, because Communism was becoming recognized, to some extent. And you can see that this is a pretty wide-eyed sort of a thing. But it was an acceptable attitude at that time. It's not acceptable now. The minorities have found out that by combining, they can whip the majorities hands down because the majorities do not get together and stop them.

I think one of the nicest things I've heard in a long time is what has happened at the University of Nevada. I'm just so proud of that University. These hippies came up there and they threw them in the lake. And they haven't been back. And this last little fuss that they started, the large majority of students were not with it at all. There've been some expressions of opinion that were very nice. I'm just proud of this university. I wish that a lot of these universities would quit their demonstrating by force, hold orderly meetings, and by a majority opinion presented in a proper way to proper authorities, show that a change must be made. Because a university is the students. And if they, with their new thinking and with their new injection into the higher places in our way of life—

The executives, the men who run things in this country, are becoming younger and younger. Their aggressiveness and their ability to carry through and work is needed in this day that is so complicated. And there's

so many things to be done, and so much impact from one thing upon another thing that it takes a youthful mind and a youthful body to stand up to it for too long. So these youngsters, they have a right to want change. But they're going about it, right now, in what I think is the wrong way. Perhaps it's the right way, because they're getting a recognition of their needs and of their determination to solve their problems that might be very good for them, as they begin to approach these problems with reason and with explanations of their needs and the demands for change that will improve things for these younger men, who, as I say, are becoming the people who run our country. We've having big corporation presidents, and so forth, of forty, forty-five years of age. And they're doing a marvelous job.

The elder people, the older people, are pretty much out of it. They are not sought for their opinions, for their experience, because their experience is not An line with what's going on today. They are relics of a system that needs to be changed. So they're just there. It's rather a sad situation, that a man who has been, we'll say, a professional man all his life, he's been sought for his knowledge and experience, and for his abilities in public service—how do you explain a free service to the city and the state, this sort of thing? You take part [in] things that are needed because you have a desire to make things better where you live and for the people around you. They are now not sought at all. As a matter of fact, they get recognition, they are treated with respect, but it's just in passing. You're not a stopping place any more because you are not able to contribute by either experience, and perhaps by inclination, to the new thing.

My own education, I thought, was the education in vogue at the time. You studied your books, you got your theory, and there

wasn't a great deal of application of theory to practical life.

I remember I was asked to make a talk to the engineers club. This was—well, we'll say while I was building inspector, someplace around in that time. My talk had to do with the study of English. At that time, the professor that I knew up there every now and then mentioned the fact that the engineering population of the school resented the fact that English was required. What did they need English for in order to be an engineer?

So my speech at that time, and for a couple of years, as a matter of fact, two or three years, I was asked to make a talk at one of their evening meetings—you know, dinner and a little talk. The talk had to do with the ability to think vocally, to put forth your thoughts and your convictions, put forth your knowledge succinctly so that someone listening to you went away with some idea of what you had said. And put it to them this way, that they might become the most brilliant engineers in the University, in their class, or most brilliant engineers—any way you want to look at it. But if they could not sit down and impart to people who needed engineering services, who were in charge of large projects, if they could not impart to those people the knowledge that they had what it took to do the job, they might apply and apply and apply and get no jobs at all. And what's the use of being able to do something if you never get a chance to do it?

So I would have one or two or three of the men (and I usually picked on someone who stuttered or couldn't talk for [laughing] sour apples) get up and tell the engineers what he expected to do. And they were complete flops. They had no idea how to approach their subject or what to say, and it was rather pitiful. But it did bring home the fact that if this young man was sitting before one of the students as an employer and asked him for a

job and trying to tell him what he could do, that he wouldn't get anyplace. Well, I helped a little bit at the time, but not greatly. They still thought, by golly, a surveyor and a designer of bridges, that's the stuff I'll build a darn, but we won't talk about it..

So the next organization, I guess, would be the Masons. When my mother died, I began to think a little bit about coming to the peak of my life and starting on the downward side, so to speak, and began to have a little wonderment about what death meant. And since my wife and I, neither of us, had been affiliated with any church nor did we wish to be affiliated with any church, I decided that the Masons might have the approach to religion, and so forth, in which I would be interested. And that's the reason that I joined the Masons.

I was a member of the first class to be initiated in Mt. Pose No. 40. The original Masonic lodges here had grown to such extent that it was deemed expedient to create another lodge, which was Mt. Rose No. 40. Perhaps also [No.] 35 was also ahead of us. I guess it was. I guess they had [No.] 13, 35, and then 40.

The Masonic work, very largely symbolic, quotes a great deal of material from the Bible. And I, not being able to understand these quotes, got myself a Bible and started reading it. And I found it was very interesting to see what the symbolic sort of parables really tried to say, gave me a new slant on the work of Masonry, certainly. And it also convinced me that, insofar as the Bible was concerned, and my religious concepts, that the Sermon on the Mount carried the entire thing.

However, one night I got a call from the then Master of Mt. Rose lodge, Ed Pine, asking me if I would be the chaplain for the lodge. And I jumped at the chance. An amusing incident happened in connection with this, that the day after I got the call and accepted

as the chaplain, Mt. Rose lodge had a first or second birthday—had a birthday, anyhow. And we had a banquet at the “V”1 down in Sparks. There were about a hundred and fifty, all told, at this banquet. And as we sat down to the table, the Worshipful Master rose, rapped for order, and said, “The Chaplain will ask the blessing.”

Well, the chaplain didn’t know word one of any blessing. I was struggling to find a few words, at least, that I could get by with. Put you know, when a group of people stand up, there’s a high roar of conversation which gradually dies down. And they begin to stand up and chairs are pulled back, and their feet are shuffling. There’s a great deal of confusion for half a minute, or a minute, sometimes. During that time, I turned to my wife, and I said, “Do you know any blessings?”

And she was very helpful. She said, “Only you, dear” [laughing]

So just about the time that the thing got completely quiet, I realized that I had been muttering a little bit to myself, and I had spoken to my wife—my lips had been moving. So I said, “Amen”

And everybody said, “So mote it be, they all sat down, and we [laughing] had dinner.

And later on, one of my comrades met me, and I think probably he was feeling a little bit high, and he assured me that I had done a marvelous job with the blessing [laughing].

Well, I went on through the chairs to become the Master of my lodge. I consider that period as very rewarding, philosophically, particularly through the studies that I initiated myself, more or less out of curiosity.

I went through the Scottish rite and became a Shriner. And then, having heard that the York rite was much more deeply religious and meaningful in some of its degrees, I also went through the York rite to the Shrine. And that, also, was very rewarding. And I consider

that my time with the Masons has helped me very greatly to establish a more comfortable philosophy of living than I had had in the past.

That, I guess, is about all there is to do with Masonry. I have not been active in Masonry for a good many years—three, four, five, at least, now—and probably will not go back into it in an active way.

The other night, I was given a Master’s apron. They had the Master of Masons for the state of Nevada at Mt. Rose [No.] 40, and they presented aprons to three past Masters. Isn’t that nice? And a case to go with it.

Well, the Art Gallery, I was a member of the board of directors for about ten years, I guess, during which time we added a section to the Art Gallery and made it available to various groups, such as people interested in photography, people interested in painting. It was available for shows for them and for meetings for them, and for a very small price. When I left the Art Gallery, I left because one of the societies (and I can’t think of the name of it; it’s the biggest one in art), these women decided that they thought they were putting more money into the gallery than the gallery was. And the gallery only has a small bunch of stock, and so forth, the interest on that bunch of stock, and it doesn’t amount to a great deal per year. So they sort of decided that they were putting in more money and having a greater need for the Art Gallery than the Art Gallery people who had started it, and they all joined the Art Gallery, which you could do for five dollars a year, or maybe three dollars a year. Anyhow, it was a small amount of money. They joined it and then ran a ticket of people for the board of directors and ran the old boys off, and I don’t know what they’ve done with it since then. But they took over, and there’s not much you can do with a thing like that.

It wasn’t a very good art gallery. It was simply abominable storage for the pieces they

couldn't display. And, of course, it was all amateur work, the cataloging, everything. It was all done by amateurs donating their time, so that it wasn't a very tremendously business-like operation, and it won't be until such time as there is a recognition of the various groups interested in art, sculptors and painters and photographers, and so forth, carvers, and they're able to get an adequate quarters for the showing of their work, for their shows, and for displays, and all that sort of thing, and for the permanent collection of an art gallery. don't think that a town the size of Reno can support very much of an art gallery. They've tried to interest the University of Nevada in our Art Gallery so that we could cooperate with them, and they couldn't cooperate with anybody. They're a state institution, and they do it their way, period—no cooperation.

So the Art Gallery is pluggin' along, doing the best it can. And I havens t been involved in it in four, five years now.

[How did I happen to get involved in the first place?] Well, they wanted someone in there to—well, they wanted a whip. They wanted someone to make decisions and make things go. And they had some women in there—oh, don't use those names—"those good women, fine gals." But they were getting a little bit old. They couldn't do all the work. Dee [Delores] Young, she was a hard worker in there. She was young enough so that she could really work day in and day out, if necessary. But they needed some people on the board of directors who could take steps. So I was one of those people that was asked if I would—well, it was a nine-year term. So I went for a nine-year term and part of another term, 'till they voted me off. And we did build an addition, but we never could get enough money to build any parking or to build any adequate storage space. On that board, we had the head of the trust department here, Dick

Kwapil. And we had I guess Robert Hawkins. He was taking care of the investments. And Dick Kwapil, who was the head of the trust department at the [First National] Bank, he was the depository for those things, and also, there was a recommendation of what they could do in the way of spending money and couldn't. So I was one of the three that went on, and, as I say, more or less in the hope that we could make some decisions and get some progress. But we didn't make anything like the progress that they thought we would make when they thought we were a couple of miracle workers, you know. Nothing to it. We'd have a great big art gallery right now. So that's all there was to the Art Gallery.

Well, the Magic Circle was a group of men interested in legerdemain, magic of various kinds. They had regular meetings, and there were several men at that time who were outgoing people and liked to appear and do shows with their magic. One of them, particularly, was a lawyer, a fellow named [Cliff] Young. Johnson, Axel Johnson, he just loved to do magic. He attended all of the meetings of the national Magic Circles wherever they might be. And he picked up various ideas about tricks he could do. I don't know whether the Magic Circle's still going or not, now. But in those days, when he went to a party, he would be bulging like this [gesture in front], and stuff in his coat pockets and under his coat, and he'd love to walk up to somebody. He walked up rather slowly, and he'd lean over them, and I can remember one of his favorite tricks was to borrow your diamond ring, engagement ring. And he had a dime store engagement ring, which, oh, would approximate a lot of engagement rings. And he would tie a string to this engagement ring from the middle of a handkerchief. The handkerchief would be in here [breast pocket]. And he'd borrow your

engagement ring. Well, he palmed it. And he'd say, "Now, I'm going to drop this in the cup, here, and cover it with a handkerchief." He'd bring the handkerchief out, and his other hand was over it, and he'd drop the ring that was in the handkerchief into the cup and kept the ring that you had given him in his hand. And then, he made a few passes and had a little conversation, and he jerked the handkerchief off, and the ring was gone, because it was tied to the handkerchief. Put the handkerchief in his pocket. And, of course, the lady began to be a little bit exercised about it. She knew it was going to be all right, but she just wondered where that ring was.

Well, Axel would fool around doing other tricks with other people, and while he was doing so, he I would) drop into somebody's top coat pocket the ring. And then he'd get looking around for the ring and "reading minds," and one [thing and] another, and the next thing you know, he'd have this guy picked out as the prowler that had the ring. And he'd go and he'd say, "Just let me pull out the ring." And sometimes the guy was really embarrassed about it, if he did it well enough.

I remember one night we went out to the Game Farm. We had a big doin's every year. It was a "ladies' night," we called it. And this ladies' night we had at the Game Farm, which is not in existence. But I was very much interested in magic at the time, and I had [Harold] Cafferata, who was also very much interested, and a very fine mechanic with his hands, he was to be the master of ceremonies. And he asked me to put on a show. And he said, "I'll give you half an hour." we all put on shows.

So I forgot it. And came the night of the party, Ruth said, "Better get your shower," and so forth.

"Well, what for?"

And, "Go to the Magic Circle." And, Lord, I'd forgotten all about it!

So I didn't have any time to figure out a routine. So I just took just about everything I had and dumped it into a suitcase, and we went out to the Magic Circle. So Caffy found this out. And he put me on first. And I can remember there was another fellow who was going to do some tricks with some rabbits. And in order to do it, he had to put the rabbits to sleep by doing something behind their ears, and another man who was going to do a cigarette trick, and in order to do it, he had to have quite a few lighted cigarettes ready.

So I went out and started to do my routine, and these two fellows went back of the stage, and at what they thought was a reasonable time, I guess they lit their cigarettes and they put their rabbits to sleep. And Caffy, [as] soon as I'd do one trick, he'd reach down in this suitcase, Well, what's this?"

And I was having a ball! So about three quarters to an hour later, he wanted me to do a little trick whereby you select a card and your wrist where your pulse is—I've got my arms around you, too, to do this [laughing]. And I can tell by your reaction whether I'm getting close or not. So I start asking questions. "Is it red," or, "Is it black, above an eight, below an eight, a picture card, da de da da? And I keep getting, zeroing in on this card, closer and closer, and telling this lady, whoever it was. This was some little lady I didn't know. But she got so fussed up and embarrassed about the whole thing that by the time I finally zeroed in on this card—and I knew what it was all the time—she was just practically jittery. And when I told her, "Is that the card" (she had seen the card; she neglected it), she said, "yes," and just practically ran to her seat, sat down, giggled, and one thing and another—really had her going! It was a lot of fun.

And what the heck was it at the Century Club there that happened? Oh. Took the shirt off a guy. You know, you sit him down in a chair and you finally get around to the point where you grab his shirt and jerk it and the whole thing comes off? Well, [laughing] we didn't get these things [wrist buttons] unbuttoned, and they were fastened to his wrist. [Laughing] I jerked his shirt off, jerked him out of the chair and down on the floor [laughing]. Oh, a lot of funny things happened because the tricks didn't work right, you know.

I had another trick in which you arranged the cards in a deck. I forgot, but it's arranged—suppose it started with the ace of clubs. Then I'd go diamonds, hearts, spades, and I'd put the deuce of spades. And then I'd go clubs, diamond, hearts and I'd put the trey of hearts, and so on, until I had the whole deck arranged in that way.

And the upshot of that was that I could take a whole deck of cards and spread them out, and you'd pick a card. "Don't show it to me." And I would simply have you put it back after you'd looked at it, and then I'd reverse the deck. I'd put the other half on the bottom, which meant that the card that I wanted to see, that you had picked, was the third card from the card I put on the bottom, or the fourth, which—I've forgotten just exactly what that sequence was. But if I see the four of clubs on the bottom, then I'd say that your card was—diamonds, hearts, spade—was a spade, and it'd be the seven of spades. So you'd pick a card, and I'd get that on the bottom and see what card was on the bottom, and I knew what card you'd picked, and you'd still have the card. I'd never see it or anything. You just take it out of the deck and put it in your pocket. And then I'd do that for about four cards. I did it for six once and forgot the last one or two [laughing].

And then I would "read minds," and gradually I'd discover where the card was and who had it and what it was, and it went over. These [were] simple little tricks, most of them. We didn't have a great deal of equipment. We did have the equipment where you put cards in an envelope. The man actually put the cards in the envelope and sealed them, only what he didn't realize was when I was throwing the cards down in a pile, he was putting in his envelope, He wasn't getting what he thought he was. And I had an envelope of my own concealed. He has a sealed envelope with a bunch of cards, and I tell him what's in it. He took it. Right in front of the people, he took it from me. I tell him, "Well, this is quite mystifying for people who are interested in magic," and they don't see it too often. They get a kick out of it.

Oh, we had as one of our members the arbitrator of the bank failures, Leo Schmidt, very interested in magic. Well, Leo got sick. He didn't feel like going out. We would go to Minden or Carson or Fallon and put on a show, three or four of us. And we had a professional clown in the organization. He always loved to doll up in his clown uniform (that is, he had been a professional clown) and do his act of magic in clown uniform. And we'd go out and do it for ladies' organizations or a Chamber of Commerce dinner, or anything of the sort. And that went on for four or five years and was very interesting, and everybody got a big kick out of it, and then it got old hat. And some of the fellows who were real enthusiasts, such as Leo Schmidt, Axel Johnson got so that he would be happy to do a few things in a room, but he didn't want to make a trip anyplace, and it died out.

Then we decided we'd teach the kids. And so the Magic Circle was now going to bring in a lot of youngsters and teach them tricks and let them have some fun with the Magic

Circle. But the glamour wore off of that real fast with the kids. When they first came in, boy, they were bug-eyed. Then after about the seventh or eighth meeting, they had lots of other things to do, and this was a chore. So that died.

Now, I don't know whether there's a Magic Circle or not. But it was just a lot of fun. We'd buy tricks and find out that we didn't get the full apparatus and couldn't do them. Then we'd try to make something to make it work, change the trick all around. By the time we got through, you couldn't recognize it, but we were doing something [laughing] we thought was fun. So, as I say, the Magic Circle died out.

Prospectors? I was a very early member. My number was thirty-one, and it's now fifteen. So many people between me and number one have died out that I'm now number fifteen in the Prospectors Club. But the Prospectors Club, as it was originally organized, they tried to make it quite a social thing, interest the ladies. Oh, they had costume nights and ladies' nights for dancing, and that sort of thing. But they just got too heterogeneous a mass of people, and groups didn't like other groups or didn't want to mess around with other groups, you know, and there're usually a couple of fellows that got out of line, so that, today, they have a ladies' night once a year, sometimes twice a year, and it's largely a lot of cocktails and dinner with some dancing. And it's got to the point where they get two or three hundred. It's just a big bash, that's all. Nobody particularly looks forward to it. You don't think that you and Mrs. So-and-so and Mrs. So-and-so and Mrs. So-and-so are going to go out and it's going to be a nice night, and you meet people you know, and that sort of thing. It hasn't evolved that way. It's a luncheon club, is what it amounts to. And I have not taken any interest in the Prospectors Club as regards helping

them put on their parties or house committee, or anything of that sort, and this is probably part of my feeling that I don't want to have any more committee work, because I usually have to do it all, and I don't feel like doing it all any more, don't want to be tied down to doing something.

Yesterday, Bunny and I were talking, I said, "Why don't we go down and look at the Calaveras Big Trees?"

And she said, "Well, I could go Friday"

I says, "All right, we'll go Friday. I'll get a reservation in some motel, and we'll come back Saturday."

This is what we like to do. So we'll go down to the Big Trees, and we'll go down to Columbia, and we'll go down to Jackson, and go down to Columbia, particularly. They're revamping Columbia. And we'll stay in the old Sonora Inn, maybe, and we could come back through Yosemite, if we wanted to. I don't think we'll try that because it's probably loaded with cars and people, you know. But that's the sort of thing I like to do. I don't want to be tied down. If I happen to want to go take a trip tomorrow, well, I say to Bunny, "Let's go," and she's packed that night. We get in the car and go someplace, and if we went down to Silverada for four days once, "Oh, what's the use of going home?" So we went down to Cannel for six or seven days. And this is a nice life! And it's surprisingly inexpensive, if you take the difference between staying home and going someplace in a car. If you're traveling in airplanes, and so forth, it gets to be expensive. If you're taking your time and traveling in a car, there's not such a great difference in the expense of living at home and entertaining a little, or what have you, than going on a trip someplace. So that's what I like to do.

I am not again going to be tied into any compulsory committee work. Oh, for instance, here's a Coca Cola man, Farr, Curt

Parr. They sold the Coca Cola plant. And he could be free to do anything he wanted to, except that he's way up in the Shrine. And it's going to be two years before he gets out of that. So for the next two years, he can't take advantage of his freedom because he's tied into the Shrine, and he's the sort of a guy that does his job. That's what I want to duck.

I was active with the Elks for quite a long time. Oh, yes, I went into the Elks in 1925. I was asked to join the Elks to be a member of their baseball team. And I didn't take much interest in them except to go to their affairs. They used to have New Years dances at the Elks Club which were real social events. The Elks all loved to go there, and there was a lot of the top social people of the town were there with tables. And they'd dance through one, two, three o'clock in the morning. And then some of them would go someplace else. Well, that died out because they were going to go someplace else, and they were going to have a cocktail party in their homes previous to the dance. So the result was they'd get to the dance at ten-thirty or eleven o'clock, pretty well plastered, dance around a couple or three times, and some'd [say], "Let's go there, let's go here or the other place," and they leave. And that's what killed those dances, was these cocktail parties previous to the club parties. But during the time that they were popular, they were very nice affairs. We enjoyed them.

Then we built up quite an addition to the Elks Club, and they put in a steam room, and they had a handball court, that sort of thing. And for a while, a lot of people were interested. They had a golf driving range—you know, put up a lot of canvas and you'd drive into the canvas, and a teacher, the golf man from the Washoe [County course] used to come out and have classes. It wasn't a thing that lent itself to tournaments, to large-scale participation. And with small groups, it was

often not possible to have someone to do it with you. it died out.

Then they had some gambling games going, of which the house took a rake-off. The poker game got out of line so that a couple of fellows went broke, lost all their money. So the board of directors, they cut that out.

But that was a phase. There was a big poker game, and a lot of fellows went to the club to stand around and watch it. And there was a big pan game, and they stood around and watched that. That pan game, however, went on for many years, and it was worth about six hundred dollars a month to the Elks Club in their rake-off. And nobody particularly went broke playing it. They couldn't lose money that fast. It was a good recreation.

And then there came the time when the Elks Club was dying on the vine. The membership was dropping. (A fellow who has a health store out here, his brother started KOH in the basement of the Elks Club. That's something else. Then KOH was first started, it was in the basement of the Elks Club.) This Exalted Ruler decided that they should have a clubhouse that was suitable for their activities. And Raymond I. Smith gave them a parcel of land out on south Virginia Street, I don't know, two or three acres, I suppose, quite a parcel of land. And he proposed that they raise some money and build an Elks Club and go out after members and make the thing a going concern. And Sidney Robinson and most all the old-timers here, Cafferata—Oh, I've forgotten the rest of them, they opposed it, saying that, "It'll never work. Take it out there three, four miles from town. It's silly to even dream of it" And a lot of young fellows he had—this man had gotten quite an addition to the membership by real promotion, just went out and manhandled boys to get them in.

So they got over the vote that they would build this club. And they raised the money, I

suppose as a mortgage on the land, and the club, of course, did have quite considerable assets of its own at that time. I remember one man died and left his entire estate to the Elks Club. It was only about \$50,- \$60,000, but they had quite a little sum of money.

So they built this club, and the membership went from about, say, three hundred to presently over two thousand. They're gaining a reputation for their food, and they have youth activities and bowling, golf, and all sorts of things going on for the members. Of course, they have card games, and, as of right now, they have a tremendous poker game going from time to time. But it's a good organization. It's doing a good job. One of the things they used to do—every year, at Christmastime, they gathered together, oh, coal and hams and bread—all sorts of food, and so forth, and lost of coal. During the year, they had requests for help for families that were in trouble, and they sent Elks out to see whether these families were on the level and they really needed help, and they reported back. I remember one family that asked for help, the investigator went out and got down under their basement and found that they had sacks of onions and potatoes, and all sorts of things. And they were asking for more, for relief. And I can remember another that I went out on with two children, and the house had almost no furniture in it. They slept on the floor on some kind of pads. The woman and the children were not there when I knocked on the door. They were at a neighbor's house. They'd gone over there because they wanted to get warm. I went in the house and looked it over, and they had things for the kids to sleep in; I've forgotten what they call them, but they're overall garments, you know, from head to foot, button down the front. They had been washed and were hanging up, drying in the kitchen. But it was a pitiful place! They

didn't have anything, except those kids were going to have most of it, anyhow. Well, they got quite a slug of stuff. So along around the first of December, we began assembling all of the materials for these families, and it would cover the basement. They made anything from a basket, to a tub to two or three tubs of stuff for each family. There were ham and potatoes and all sorts of things that could keep for a while. There wasn't refrigeration with any of these people, you know. They'd usually have a turkey, and then, if they couldn't cook it, they'd take the turkey down to put in—oh, [Rauhut] had a bakery over on Commercial Row for years and years and years. He's retired now. They'd take them over there and he'd put these turkeys in a big oven that went 'round and 'round, and he cooked the turkeys for them, stuff them and cook them. So that was one of the things, and clothing.

This was all done by members, donating their time. It took a month to assemble everything and have it checked for the right people. And then they got the trucks and what have you to deliver it. These people didn't know they were going to get it. And I think this was one of the things that really appealed to these Elks. They'd go out with a big basket of food and clothing and come in like a Santa Claus—your eyes pop, you know [laughing]. But it was a good thing, and they did it for years.

Then they had Uncle Dan's dinner at Thanksgiving time. Dan Wheeler had started this. He'd started this when the Elks Club was started. And he said, "We will not be worse off for the little we give—," I've forgotten what his little statement was, but this was the theme of Uncle Dan's dinner. And they donated money. you bought your ticket, all right. You paid for the dinner. And then you made your donation. And they had an emcee, like [George] Vargas, for instance, and Brewster

Adams, very clever. Each man's donation was read off. They'd start with [George] Wingfield, who usually donated \$1,500, or something of that sort, and they'd go down through the one or two five-hundred-dollar donations, and so forth, 'till they got down to the hundreds, and then the fifties, and the twenty-fives, and the tens, and the fives. And it would run up seven, eight thousand dollars. This was what they used to buy the materials that weren't donated in the Christmas thing, or their charity fund, This should not go in here, but [a professor] at the University, whose wife died of cancer, he had her in St. Mary's Hospital for I don't know how long. She was dying, and he ran out of money completely; he had nothing. He couldn't have nurses, so he taught all day and stayed with her all night. And the Elks got right busy to help him out, and they got in some five or six thousand dollars for him, kept him alive and helped him bury her. But he would've been dead, too, if he hadn't had some help.

And I remember that this guy, [Francis Margate], they didn't have enough money, really, to take care of him, and I knew him pretty well. He was speaking to me one day. I got the idea that he was trying to work up to ask me for some money. So I helped him out a little bit, and we got around to it, and he needed three hundred dollars so desperately. And I gave him the three hundred dollars, never expected to see it back at all.

Well, his wife died, and he retired, and he went down and had a little church. He was a minister. At the University, he taught languages, Arabic, and all kinds of offbeat languages. I guess it was two or three years later, by God, I got a check for three hundred dollars. This refreshes your faith in people. The guy had no chance to take care of himself, his wife, or anything else. He had no chance to pay back the Elks. He couldn't ever pay

that five or six thousand dollars back. But this was something that's part of the Elks policy. That's what they get their money for. When some deserving case comes along, and it's just impossible, they're going to come in and do something. And if it takes five thousand, they'll go for five thousand. And if it took fifty thousand, the chances are they'd get a lot of guys to put in some dough and do most of it.

But to borrow from a private man with no guarantee to— he did—he just said, "Thank you." He needed the money. You knew what he needed, and all he wanted to do when he got it was to get the hell out and use it for what he had to do. It was evidently quite urgent, and I'd forgotten it. But three years later, back it comes, and three hundred dollars must have been a terrific sum to him, and there probably were others that he was doing it for.

That was a long thing, and very nice. So many things occur to you as you go along that you wobble back and forth off here, and off there things you've forgotten. And they come back. A lot of sweet things happened during my active membership in the Elks. Today, I haven't been back to the Elks in a long time. I went back to a Past Exalted Rulers' meeting the other night, and it was very pleasant. Next Thursday, the American Institute of Architects is giving me an award as "architect emeritus" at a dinner. And I'll have to make them a little speech of some kind, which I hate. I just got an award of a Master's apron from the Masons at a special meeting. They had the Grand Master of Masons of Nevada make the presentation, and it was extremely nice.

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## A NOTE ABOUT MY DAUGHTERS

Now, the girls, they were born in 1924 and 1925. Ann was first, and Charlotte came along a year later. Ann was always rather healthy. “e almost lost Charlotte. She couldn’t digest food at all. And I can remember we lived over on Stevenson Street. (The house is gone now. Stevenson Street, I think, is only a block long.) Charlotte was crying almost all of the time, and it finally got down to the point where I took care of Ann and Ruth took care of Charlotte. And I’ve, many times, taken Ann out and walked up and down the street at three or four o’clock in the morning, carrying her in order to get away from the noise and get her settled down, and get her asleep, because Charlotte was just simply one big racket.

Well, our doctor here (and I’ll not give this guy’s name. You knew him. !e was a guy with a shriveled arm), when we finally asked him what he was doing about Charlotte, and what we could do, he had to say, “Well, all I know is I give them this (and I forgot what he said it was), and if that don’t work, I don’t know what to do. He’d’ve let Charlotte die.

And we changed to a doctor named [John] Tees. And Dr. Tees immediately said, “Well,” he said, “we will put her on a diet of warm milk, and you will stir into that warm milk ascorbic acid” (anyhow, it’s a lemon derivative). He said, “It takes about twenty minutes for it to be absorbed.” So I stirred all Charlotte’s feedings for twenty to twenty-five minutes. And she simply went to sleep and grew like a weed.

And it develops that what happened was that the adding of this acid, or whatever it was, helped sort of predigest the food. So she began to get nourishment. And she just grew like a weed! And as far as I know, ever since that time, Charlotte has been in wonderful health, as has Ann.

Ann was the nervous one. when she went to work for me in my office, she could hardly bring herself to answer the telephone. This was talking to a strange person. She had a block of some kind against it. And she told me just the other day, that while she has no trouble at all in talking to anybody—Over the

telephone, face to face, or what have you— she still has that feeling in the back of her head of a little withdrawal from meeting people and to talking to strangers, and so forth, in spite of the fact that she is expert at it.

Ann did not go to college. Ann finished high school at about the time the war came on. That's when she met her husband, was in high school. They fell very deeply in love, and when he went to the service, they decided they wanted to get married. And I was not about to interfere with anything of that sort. I could probably do more trouble than good, sticking my fingers into that! He went back East for his training, and as soon as he could, he came back here, and they were married, after which he went over on the other side, and Ann stayed here, working.

And I can remember—she lived with us—I can remember that, every now and then, she would come to a place where she just had cabin fever, and she wanted to go someplace and do something. So Ann and I would go down and do the town. And my wife would get from one to three telephone calls the first thing the next morning, asking how she was, and a nice day, and da da de da, and, "By the way, I saw your husband last night, da de da." She got told. Every time that Ann and I went downtown, Ruth got a message, never missed, which goes to show you that when you live in a small town like Reno, you have to be a decent guy, or you're in trouble [laughing].

Well, Bill came back from the war, and Ann and Bill had a few ups and downs there for a while. Bill had gone into a sporting goods store, selling all kinds of sporting goods, which was a natural for him, because that was his bent, was fishing and hunting, and so forth. And he didn't make that very well. I've forgotten why. It wasn't because he didn't work. Also, he wanted to be a writer. He went to the University for a short time with the idea

that he would come out as a writer. I think that, today, his broadcasts over TV are fairly erudite, and good language, and so forth. He might have made a writer. Anyhow, he got into the Fish and Game Commission setup, and this was a natural for Bill. And he's been there ever since, and I think he's well up in it now. He's in, I guess, public [information]—I don't know, advertising—something of the sort, for the Fish and Game. He's not out in the country any more. He has a desk job. And I think that his retirement is in sight, and that it will be a fairly good one.

Ann, then—I don't know how she got to working with Russ McDonald. She left us, and she might have gone to work for him then. Anyhow, she and Bill moved to Carson. And immediately, they got into the church. Ann started playing the organ a little bit and began to have friends such as they never had in Reno. They didn't have money to entertain, and they were just a family, living all by themselves. They didn't have much to do at all with anybody, except us. When they got down in Carson, Ann told me that she never again would live in a larger city, that she was somebody down there, that she had friends, and she was included in the things that they did, and she was very happy. And I think that, today, that is still the case, that they both love Carson, very happy with living there.

Ann became Mr. McDonald's secretary and became, also, the head of the department under him, to the point where she became declassified. She's not in Civil service any more. And shortly—some short time ago, I believe that she was appointed as his deputy, that she is now, definitely, under him the top person in that department.

I'm just so proud of that kid! I think that's a wonderful thing. Because she didn't have a college education to go. She did that on her own, and she did it with quite a few handicaps,

too. And one of the handicaps, of course, was her nervous temperament, which she has pretty well conquered, and with Bill, her husband, who is a rather easy-going, big guy, and she can put her head on his shoulders and just calm right down like nobody's business. I think it's a beautiful thing they've got! Very nice.

Charlotte went to college. She was a Tri-Delt. Her mother was a Pi Phi, but Charlotte's friends all went Tri Delt, and we wouldn't want her to go any place but where her friends went, so she became a Tri-Delt. She was a math major. She has a very fine mind; it's an academic mind. She's not one to go out on the market and buy stocks and bonds and hurly-burly, and one thing and another. Charlotte is a wonderful character, too. She has a fine mind.

And she married to an up and coming chap, Johnny Carter, who was well on his way to good jobs when he decided that he would tell his company where he was going to work, instead of the company telling him where he was going to work. He would come to see me. And also, he started as a manager for this local company, the name of which I never have been able to spell or pronounce. It has to do with gases of various kinds, oxygen—. It was called the Sierra Oxygen Company, I believe, at the time. But it also dealt in various other types of gas.

He began to go to these conventions as the representative of his company, on expense, with instructions to entertain certain people, and what have you. This drinking and entertaining was not exactly Charlotte's thing. She didn't fit into that as well as he would have liked her to. And naturally, as time went on, he became more and more social, and she became a little bit less social, and there was where the rift began to come between them. He felt that he was unable to pull her out of

this "groove" that she was in, and what have you. And they had, I think, quite an unhappy time, although he was a good provider. He got their present home well started while they were married. But he finally pulled away and got a divorce.

And it developed that he left Charlotte, just about, with nothing, and that his health insurance was cancelled when he left the company. And she had no insurance, even. And that girl got down to where she got quite sick, and she had to have an operation. Her car was on the blink, and this is the first time Charlotte ever told me that she didn't have plenty of money, that everything was all right and that she was going to just go right along. That kid's got courage, too, lots of it! Just like her mother.

So Charlotte called me up one day, and she said that she had to have an operation, and that she had to put the money down to the hospital if she was going to get in. I know she hated that worse than poison. And I took her a couple thousand dollars, and she got her operation, and she got her car fixed, and what have you. And from there on, she, without ever talking to me again about money, or asking for any kind of money—oh, except I cancelled some debts; they'd gone into a service station, bought a service station, and We'd helped them with that. We cancelled that out. But she never asked me for anything. And today, she has remarried, and he is a guy who likes the kind of life that Charlotte likes to live, and this doesn't mean running around and entertaining and drinking, and so forth. They have a family life and it's very nice. And she is well on her way to happiness and contentment and to a retirement pay that will take care of her old age. She feels that everything is all right. Of course, I think probably I'll be able to help her out when I decide to kick off and go to Nirvana, or wherever I'm going.

These two gals, both of them, have excellent minds, and they should have, when you think of their mother. Charlotte, by the way, came within a fraction of a point winning the gold medal when she graduated from college. Besides having the courage and that sort of thing, Charlotte is [a] lovely person in a way that Ann isn't. Ann is quite practical, and Ann has heard what's going on and who did it to who and why for so many years that she has one attitude toward life. rid Charlotte, never having been in that sort of a situation, has another attitude. And Charlotte is just a plain, lovely character, but she's never going to get her sword out of the scabbard and go campaigning anyplace. Ann is—oh, she searches for the reason things happened a little bit, a very brilliant gal, a very fine character, substantial. So those are two gals. You bet, they're good kids!

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CONCLUSION

Actually, I don't think I have any philosophy at all, as such. I can remember—to get to religion, I've discussed religion a little bit with you, that I saw the ministers in the pulpit, and I saw them in their private life, and the fact that these people have families, they have wives to give a little fun to, and they have children to educate, and they must, necessarily, look to their financial welfare. And when they do that—sometimes, I have heard [W. D.] Trout, for instance (Trout was the [laughing] name of a minister), talking about his sermon and saying, "I'd better not say that because Joe Doakes will be there, and he wouldn't like it. He's a pretty good contributor." So there's a coloring of your teaching and of your ministry due to divided loyalties. Probably, this is one of the reasons that the Catholic church refuses to let their priests marry. They then don't have this disturbing issue on the side of children to take care of and a wife to support, and clothes, and what have you. This is a pretty big side issue, too.

Now, there are other ministers I have known, such as John T. Ledger of the Episcopal

church, who, I think was a thoroughly dedicated humanitarian as well as a minister. He recognized a combination of religious beliefs and of human needs, and what have you, that weren't exactly like some "dedicated" men that read the book and threw it at you. And then we were married by a minister in the Episcopal church out in Sparks, a rather young fellow; he and his wife have three children. I met them at a party, too, socially. And he gave up his ministry and went up to St. Mary's Hospital to work with the underprivileged or the older people up there in the nursing home, and what have you. His wife happens to be dedicated along this sane line. So they, as a man and wife, will probably do all right, unless she gets tired of it after a while, or they both do. But when it comes to educating their children, they'll have to have some help from someplace, and I suppose that along the road, people like that sometimes run into angels who appreciate what they're doing and who contribute in some way to see to it that the needs are supplied. And, of course, these people then say that "the Lord provided."

But this, again, it's people. I have little incidents in my life that have remained with me. I've told you of one, of the old woman, big, fat old lady (Hansen was her name) that I took silk stockings and panties, and stuff like that to her (Ruth bought them for her), and newspapers, and that sort of thing, rather frequently. She was on old age pension. And she had a little bit of a house, one room and a kitchen, a shack, you might call it, and this very small lot with a couple of fruit trees on it that her husband had left her in some way. And the old age pension people were figuring on taking that away from her and putting her in some state-owned facility. She was having that fight on her hands.

But when I took these things to her, it wasn't the stockings which she needed, or the underwear which she needed and couldn't buy, it was sitting down—putting my feet up and sitting down in her chair. She only had one chair, great big thing that fitted her, and there were a couple stools around. I had to sit in her chair, put my feet up. And then, it was the conversation, the talking, the contact with somebody who seemed to be a little bit simpatico for her. This was bigger than anything that I brought her. Bringing her the little presents was just the reason for being there. The conversation, that was the meat. And she loved it! And she swore like a mule driver! I'll never forget her.

I know, there was another incident like this that had impressed me. it was in going from Elko to Winnemucca, up over the mountain road. There was a mining camp called Midas, I think it was. And a woman there ran a boardinghouse for the mine. And we were always making the trip at night. I was supervising work in both Elko and Winnemucca. We'd stop there, and usually around two o'clock in the morning, she'd get

up and cook us breakfast and cook us a meal. And then, she'd sit down across the table and put, plunk her two elbows down on the table and put her cheek in her hands and say, "Now, tell me!" Now, she wanted to hear the gossip from Elko and from Winnemucca, particularly any dirty little gossip that we had. She loved scandal. And, of course, we told that dear old lady some pretty tall lies [laughing]. But this was the important thing, communication with some people, something that she couldn't have, couldn't get. She didn't have newspapers, didn't have a radio. So when we came in, it was like a breath of the outside. These things, and many more like it, have impressed me with people.

Then, too, this business of religion. Always, I have thought of a god who was far bigger than this little world of ours, of a god that did not watch over me personally, as some people feel. Religions taught this. This, also, I thought, that in teaching that there was help available through God, and that by going to church and making yourself acceptable to God [laughing], you might get some help when you needed it; this is the basis of a great deal of churchgoing throughout the centuries. The thought of life hereafter—I could never conceive of a life hereafter sponsored by a god such as people are wont to think of, that did not apply to all life, and that has not applied to all life since the beginning of the world. And this leads to a pretty well populated place, [laughing] if there was a life hereafter. you might go up there and get chased by a dinosaur, and probably scalped by an Indian, and have some old-time Viking want to run you through with a sword. So this didn't make any sense to me.

And then, in thinking about other planets and the possibility of their being inhabited and their having a life hereafter (it was

probably the same place), this would be a pretty confusing sort of a joint [laughing].

So I couldn't quite see that. Nor could I understand how, we'll say—take the Hindus, with their belief that they can sit and gradually divest themselves of all earthly cares, and so forth, until they become just a beautiful thought [laughing]. And then they're going to go to Nirvana, which is their heaven. Now, what would the Lord, who was a doer, absolutely nothing but a doer of things, how could He countenance having some guy that sat on his fanny all his life, coming up and sitting down in His heaven? [laughing]

Well, these are silly little thoughts. But nevertheless, they're all part of what I gradually, I think, have come to. I came to the point (and this was while Ruth was alive, too) when I felt perhaps I had reached the peak of my life in physical development, and so forth, that there would be a gradual decline. And I began to wonder what I had, what preparation I have made for a life hereafter, if there was such a thing, what preparation I'd made for death, actually. As I thought of all these things I'm telling you, they're just—there's no basis for them. There's no fact behind these things. I had nothing solid.

And I, too, then, began to wonder where I was going to find, perhaps, a bunch of people who had beliefs that I could accept. And that's when I turned to Masonry. I thought of the Masons. I thought, I'll join the Masons and see what they have." So I joined the Masons. And I saw, in the Masons, a great deal of religion in its ceremonials, and so forth, and uses of quotations from the Bible in its work, initiatory work, and that sort of thing.

But I saw there some of the most beautiful, little human things, the—not giving—and I want to talk about giving before I get through. I don't believe in giving. Not giving, but

helping someone to help himself, giving a little, of course, to get started, whatever it might be.

We had trials of Masons who had slipped out of the groove, and I watched Masons who were accused by, perhaps, people that didn't like them. Perhaps the accusations were badly colored. They were accused of things that were non-Masonic, and they had to be tried to see whether they would be thrown out of the Masons or not. Usually, this had to do with family matters. And I saw some of these fellows come up with the most beautiful character, men that had been accused of things. And perhaps they were in the wrong. They may have done what they were accused of. And they stood up there like men and told about their case and why it happened, and what they felt about it. And I want to tell you, they were damn fine Masons! I saw quite a lot of that in my years of going through the chairs of the Masonry.

I remember in Mount Rose Lodge, they would have a recess called, and everybody'd run out and buy a bottle of coke from a machine. And I've seen the boys get up from their chairs to go out and get their coke, and start crisscrossing across the hall to the two doors. And this guy meets this guy, and he comes in; here're three fellows, and they don't pass one another. They all stop, yak, yak, yak, and they're yakking away. I saw seven—and I counted them, because I was interested in this—seven little groups of men, two to three to four, that had stopped momentarily to pass the time of day and say something to each other, and they didn't know each other well, probably. They were Masons together. They saw each other in Lodge, and they might see each other in private life a bit. But seven groups weren't all close friends. This was just a stop to say hello. And it was rather nice. Now,

I liked it. This was just another illustration of the kind of thing that is shaping the belief that I have finally come to.

And I guess that's all there is to say now, is that I think (and I think I've said this before to you) that we are born with everything it takes for us to go through life. We can look back—let's say we look back a hundred years in this country. The people who are born today at birth must be almost precisely like the people at birth in those days. In the matter of when they're normal, healthy people, they've got about the same size brain, the same physical and mental makeup. A hundred years ago, we had—oh, even two hundred years ago, start back there. They're the same people. We had even witchcraft, and that sort of thing. tie had all kinds of beliefs. today, we have men with the same capacities at birth who know about planets, how to get to them. Their technologies are tremendous as compared with the technologies of these same people two hundred years ago, or a hundred years ago. They haven't reached any kind of a limit of what they might be able to do with education and training—no limit whatever. So I think that we are born with everything we need, and that when we sit down and pray for help, the only thing we can do, and the only thing we can expect, is that we may put ourselves in a better mood. We may give ourselves a little confidence. We may put ourselves in a better way of thinking to accomplish the thing that we're asking for help for. Well, I think we do it with what we have been given to do with.

And I believe that my life, since—well, since the Depression—I think I tried to explain to you that the Depression was a dividing point in my life from a wild kid to a guy who went to work and tried to do things right. I think that my life has been made very

beautiful with the things that I have been able to do to help people help themselves.

Now, as an architect, I could be an arbitrary dictator on jobs. And we build a building, so we have a contractor who's a general contractor, and we have a subcontractor for masonry, for electrical work, for plumbing work, and painting, and on down. He's got perhaps a dozen people whom he has contracted with on the basis of the contract that he signs with my client. And I am supposed to stand between this contractor and his subcontractors, and this contractor and his owner as an interpreter of these documents that I prepared for the owner. I say, "This is what—there is a question. You think it means this, he thinks it means this, but this is what it meant. I prepared it. I know. So," I say, "this is what it meant." I have to soften that sometimes, because one man, the owner, is giving the contractor the business, or the contractor is giving the owner the business, or a sub is giving the contractor a bad time.

The result was that I gradually came to a feeling that my job was to make this job run smoothly and to be built as it was intended to be built as rapidly as possible and for the money available to build it, and that in so doing, I had to take these various disagreements, which all stemmed from money (these men were in the job for money), and that's where I finally got to the little saying I have here, "You look for the money, and you'll find the trouble." A man is going to lose his profit and some of his money on the job, he is going to try and cut some corners. Now, my job is to say, "I want it done the way it was designed, but there are possibilities of a little give and take every place."

And if you can, with this man who is angry, we'll say, and has been fighting with his contractor and doesn't want to lose the money, or can't even afford to lose the money,

if you can soften this a little bit, a little give from above for a little give from below, pretty soon this man stops fighting the situation, and starts thinking about the situation, and he begins to find maybe he can work this out a little better. He can save a little here, he can speed up a little here. And he finds that he can do something about it, besides my having given a little bit. He gets over this block he has. And he finds out he can do something about it, and suddenly, he goes ahead. And I have a friend. He thinks I did something for him. I didn't do much for him. All I did was just open a door a little bit, and he did the rest of it. I did a lot of that.

The result was that I have so many friends among the contractors—oh, Camille Solari, for instance. I can still hear Camille Solari, and he does it every time he gets into a bunch of people and starts talking, “When this guy says, ‘Do something,’ you better do it!” [laughing] Yet, he doesn't mean it that way, that I'm going to make people do it. I'm going to get it done. I have to get it done. And sometimes, of course, there comes a time when you stand down on your two feet and say, “This is it.” And whoever wants to battle about it gets up and battles. You do the best you can. And you lose some of those battles, too, because you may be right, but it may not be the best thing to do for all concerned. And many times, the best thing to do for all concerned, even if it involves a little illegality, or something of the sort, gets done. And sometimes, this is the best thing, too.

So, this, for fifty years, was a gradually increasing Viewpoint, that I had to give help to people so they could do the thing they needed to do. And, now that. I'm out of business, I have so many really nice things happen to me in little words of praise and little words of pleasure, it seems, and whatever, by people, because I almost have no one left

[laughing] that I did dirt to [laughing]! And I think, right now, the only Philosophy of living that I could say I have is a philosophy of circulating among my friends and the people I Come in contact with ease and with pleasure and with a little help here if I can do it. But in all cases, a nice, serene, easy association with people. Because if there weren't people, we wouldn't have religion, or we wouldn't be on the moon, we wouldn't do anything. All we've got in this world's people, and what they can do. And there's no limit to what they can do, if they are freed in their heads to do it. But we're not freed in our heads.

All of us have lives with parents, with schools, and early associates, and we are formed along some kind of a groove which sort of stays with us, and is perhaps difficult, like keeping your head down in a golf awing is rather difficult to break out of. So you have all kinds of people, and you have so many people who privately recognize faults, wish they could get over some of the things that they constantly do, people in whom you would find considerable beauty of thought if you could reach it. But they're covered up with a sort of a front that is the product of early life, and that sort of thing.

Take my early life with my parents. I suppose that my mother was a churchgoer in her early days. But she got well over going to church. Dad never went to any church for any reason at all. So I did not have an early bringing-up with a religious background. And this way be responsible, too, for part of my feeling that orthodoxy does not offer much for me. My parents also didn't—. My father never took me fishing, or any of that sort of thing. He went fishing. He never took me with him. And his idea of being good to me was when he had money, he'd give me four or five dollars, and he'd done a pretty good deal. And it wasn't until he was practically on his

last legs that he said to me one night, "I never knew thee before." Well, we didn't know each other. My mother, as long as Father was alive, she was father's wife in the strictest old-time sense. "tat he did, she did. What he thought, she took. Whether she thought it or not, she went along, I guess. And it wasn't until she came to live with me (she was with me eight years) that I really began to know my mother. SO I didn't have a family background. I just was untamed, almost, damn fool.

And then in making my own way in life, you come up against so many things that put you on the defensive. And the first thing you know, you are bulling your way through your friends, and your life, and everything else, without giving thought that you should to what you're doing and what's happening. I think that I had quite a bit of that in my early days. And I was always a "take charge" guy. And I think that was possibly the reason I was a "take charge" guy. I didn't want anybody telling me anything. I was going to tell people. So when I joined the Legion, I became commander of my post. I became district commander. I could have been state commander if I had wanted to go on with it, I think. It would have entailed an election. I don't know whether I'd've won or not, but I think I could have. When I went in the Elks, I became the Exalted Ruler of the Elks. When I went into the Masons, I became Master of my lodge. When I went to the Uniform Building Code Association, the International Association of Building Officials, I became a member of their board of directors almost immediately and was president for two years. That's the kind of a guy I always was. I had to take charge.

I am well over taking charge now. I'm perfectly willing to go along. And I am not so critical, and not so ready to believe what one man says about another any more because I

have seen so many nice things in people that I could have hated, people that I could have said were no good, that were bums. And yet, underneath there someplace, at some time, there pops up a very nice thing. And it happens with a great many people. That's not philosophy, but that's the way I think I am now. I don't see any need for being any different.

The people around me have been—oh, they've been so nice. They've been so nice to Bunny. She has a large number of friends. And she is affectionately thought of. There are some of the younger people around that feel that she is—oh, she "puts on" an attitude of some kind, that she's too effusive. That's the way she is. And it is sincere. It comes from the heart. One lady told me that Bunny was not her cup of tea." And the reason that she said that, I'm quite sure, is because you say something to Bunny, and she's going to come right back at you with a big smile, and she's going to jump up all as though this was a very illuminating and wonderful thing you've said, and how about some more of it, and so forth. It's natural. She's a beautiful character, really is.

Ruth, my [first] wife, was more serene, easier, just as unassuming, but she gave you her full attention, didn't care who you were or what you were talking about. She gave you her attention and heard what you had to say, and she came back with something that was agreeable to your point of view, unless it was a necessity for her point of view to help you, or something of that sort. But she was the more even-dispositioned. But another very, very beautiful thing, and a most respectful attitude to all people. Criticism was almost unknown to her. She was undoubtedly criticized, but I don't remember criticism on her part. I do remember her always attentive and respectful attitude toward all people. And particularly, I remember, when we got

to talking about almost anything, her crystal clear expressions of her thoughts, and her good, solid thoughts—not details so much, but the basic, the fundamental of the thing she was talking about, she was so Lid. And her expressions, as I say, were—it was beautiful to hear her talk—lovely character, oh, a lovely character!

How I ever got into marriage with two such women, I'll never know—just lucky, I guess [laughing].

I don't know anything else to say. I've talked and talked and talked. I've thought of a lot of things I haven't thought of in years in making these talks. In laying awake at nights, I have thought of things which I should have told you, but which I've forgotten, that I thought might be interesting. There's so many things that have gone on, so many things that have influenced my thinking and my actions, so many of these for the better, too, that have been almost taken for granted, that—this is a good thing, now. I'll do this from now on. But how it came about has slipped my mind, So whatever I am, as of now, as a retired man, I am, I hope, a gentleman who loves the people who are around him.



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## ORIGINAL INDEX: FOR REFERENCE ONLY

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